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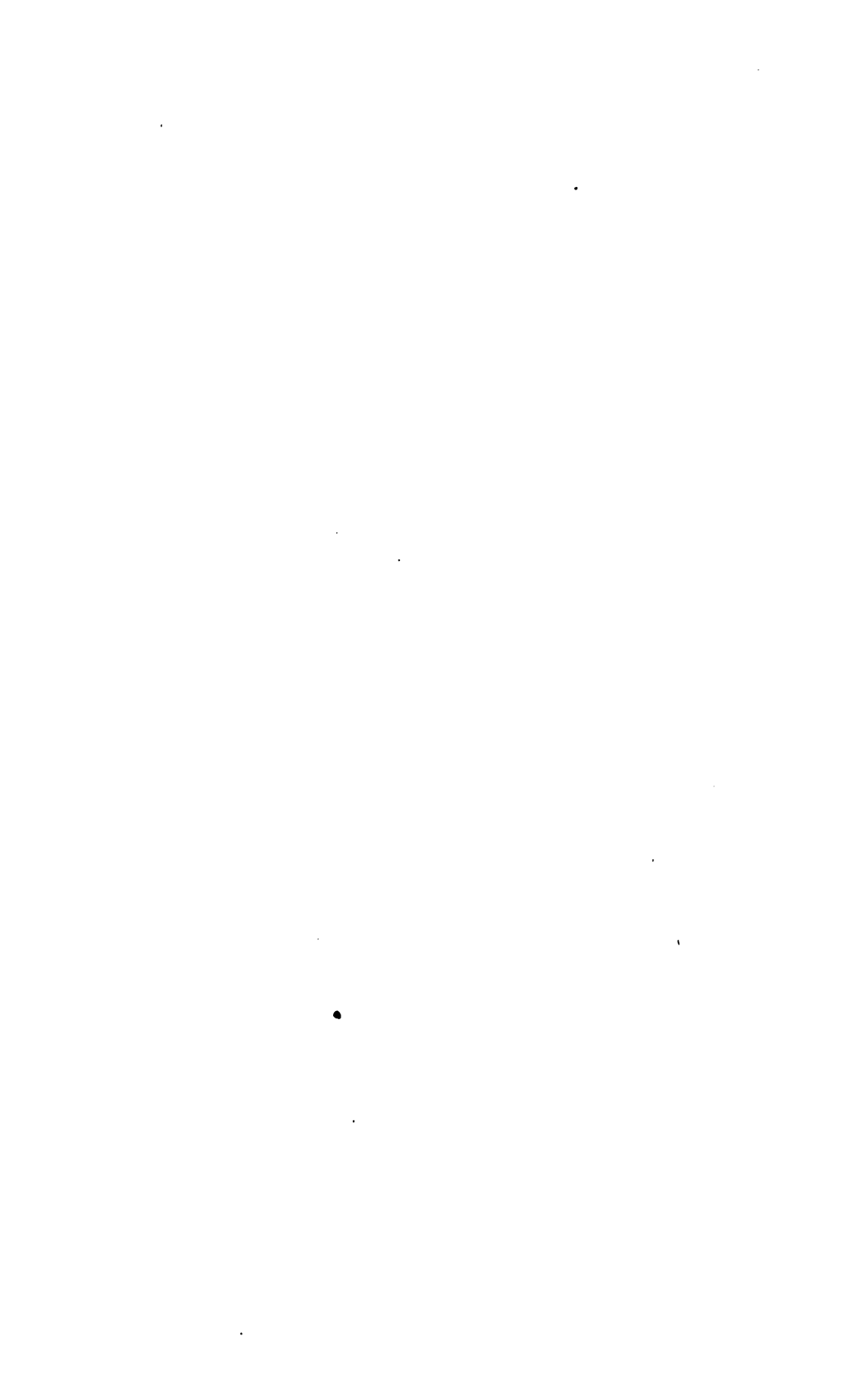
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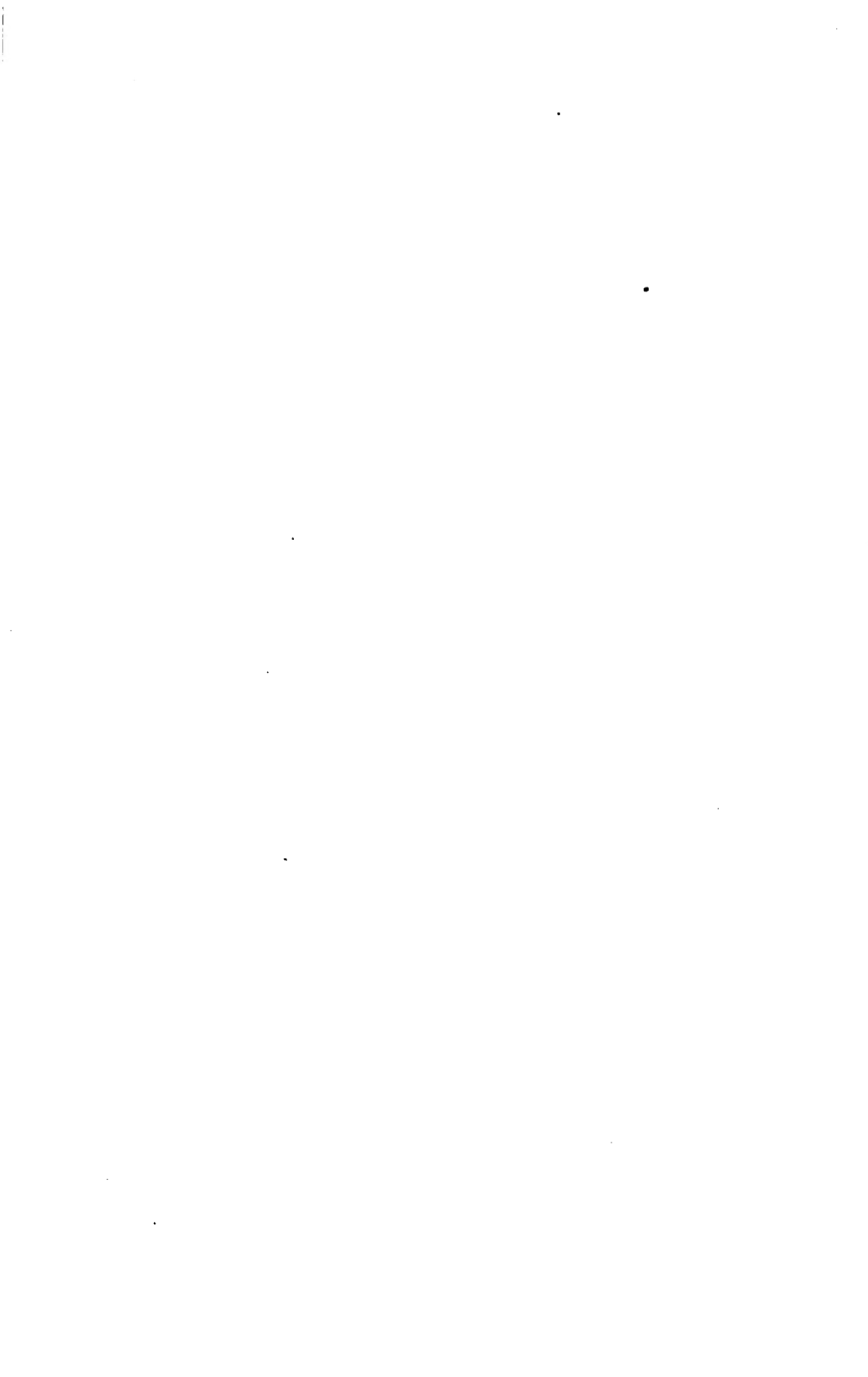
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Proceedings of The Second Pan American Scientific Congress

WASHINGTON, U. S. A.

**Monday, December 27, 1915
to Saturday, January 8, 1916**

**Compiled and edited under the direction of
Glen Levin Swiggott, Assistant Secretary General**

SECTION IV

(IN TWO PARTS)

PART 1

EDUCATION

**P. P. CLAXTON, COMMISSIONER OF EDUCATION OF
THE UNITED STATES, CHAIRMAN**



VOL. IV

**WASHINGTON
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Letters of Transmittal.

WASHINGTON, D. C., *May 31, 1917.*

SIR: Pursuant to the recommendation of the executive committee of the Second Pan American Scientific Congress, which was held in Washington December 27, 1915-January 8, 1916, and by the cooperation of the United States Congress (urgent deficiency bill, Sept. 8, 1916), the papers and discussions of that great international scientific gathering have been compiled and edited for publication under the able direction of the Assistant Secretary General, Dr. Glen Levin Swiggett. In this volume is contained the report of Section IV, of which Dr. P. P. Claxton, of the executive committee, was chairman.

In my formal report, which has already been submitted, I enlarged upon the importance of the Second Pan American Scientific Congress, its large attendance, and the high quality of its papers and discussions. I will, therefore, in this letter, which, in slightly varied form, introduces each volume, make only a few general references.

All of the 21 Republics of the Western Hemisphere were represented by official delegates at the Congress. Unofficial delegates, moreover, from the leading scientific associations and educational institutions of these Republics presented papers and took part in its deliberations. The papers and discussions may be considered, therefore, as an expression of comprehensive Pan American scientific effort and possess, in consequence, inestimable value.

The Congress was divided into nine main sections, which, with their chairmen, were as follows:

- I. ANTHROPOLOGY. W. H. Holmes.
- II. ASTRONOMY, METEOROLOGY, AND SEISMOLOGY. Robert S. Woodward.
- III. CONSERVATION OF NATURAL RESOURCES, Agriculture, Irrigation, and Forestry.
George M. Rommel.
- IV. EDUCATION. P. P. Claxton.
- V. ENGINEERING. W. H. Bixby.
- VI. INTERNATIONAL LAW, PUBLIC LAW, AND JURISPRUDENCE. James Brown Scott.
- VII. MINING, METALLURGY, ECONOMIC GEOLOGY, AND APPLIED CHEMISTRY. Henry Jennings.
- VIII. PUBLIC HEALTH AND MEDICAL SCIENCE. William C. Gorgas.
- IX. TRANSPORTATION, COMMERCE, FINANCE, AND TAXATION. L. S. Rowe.

These sections, in turn, were further subdivided into 45 subsections.

Over 200 delegates were in attendance from the Latin American Republics, while over a thousand from the United States participated in its meetings. The discussions and proceedings of the Congress attracted world-wide attention, and it was undoubtedly the greatest international scientific meeting that has assembled anywhere in the history of the Western Hemisphere and possibly of the world. It was, therefore, a fitting successor to the first Pan American Scientific Congress, which assembled in Santiago, the capital of Chile, in 1908, and to its predecessors, confined to Latin American representation, which in former years met, respectively, in Rio de Janeiro, Montevideo, and Buenos Aires. Its success was a logical result of these preceding gatherings in Latin America and of the hearty cooperation of the Latin American Governments and scientists.

To those who may have their attention brought only to the individual volumes covering the papers and discussions and who wish to know more of the proceedings of the Congress and the results accomplished by it, it is recommended that they should

also read "The Final Act—An Interpretative Commentary Thereon," prepared under the direction of Dr. James Brown Scott, reporter general of the Congress, and the report of the secretary general, prepared by the latter and the assistant secretary general Dr. Glen Levin Swiggett. In these will be found not only the final act and the illuminating comment thereon but lists of delegates, participating Governments, societies, educational institutions, and other organizations, together with a careful story and history of the Congress. They can be obtained by addressing the Director General of the Pan American Union, Washington, D. C.

In conclusion, I want to briefly repeat, as secretary general of the Congress, my appreciation, already expressed in my formal report, of the hearty cooperation in making the Congress a success given by everyone concerned from the President of the United States, yourself as Secretary of State, and the delegates of Latin America and the United States, down to the office employees. The great interest manifested by the permanent executive committee, headed by Mr. William Phillips, then Third Assistant Secretary of State, the Carnegie Endowment for International Peace through its secretary, Dr. James Brown Scott, and the executive aid of Dr. Glen Levin Swiggett, as assistant secretary general, were vitally instrumental in making the gathering memorable. The Pan American Union, the official international organization of all the American Republics, and whose governing board is made up of the Latin American diplomats in Washington and the Secretary of State of the United States, lent the favorable influence of that powerful organization to the success of the Congress and authorized me as the director general of the Union to also take up the duties of secretary general of the Congress.

Yours, very truly,

(Signed)

JOHN BARRETT,
Secretary General.

The Honorable The SECRETARY OF STATE,
Washington, D. C.

WASHINGTON, D. C., 31 de maio de 1917.

EXMO. SR.: Em cumprimento de uma recommendação emanada da Comissão Executiva do Segundo Congresso Científico Pan Americano, que teve lugar em Washington, de 27 de dezembro de 1915 a 8 de janeiro de 1916, e, devido ao auxilio do Congresso dos Estados Unidos (Lei para Orçamentos extraordinarios de 8 de setembro, 1916) as memorias e as discussões dessa assembléa scientifica internacional, foram colligidas e preparadas para publicação sob a proficiente direcção do Secretario Geral Adjuncto, Dr. Glen Levin Swiggett. Este volume comprehende o relatorio da secção IV que foi presidida pelo Snr. P. P. Claxton, da Comissão Executiva.

No meu relatorio official, que já tive a honra de apresentar, me detive sobre a importancia do Segundo Congresso Científico Pan Americano, da sua grande concorrência e da alta importancia das theses e das discussões. Na presente nota, portanto, de uma maneira muito ligeira, destinada a apresentar cada um dos volumes, eu farei apenas algumas referencias muito geraes.

Todas as Republicas do Hemispherio Occidental, vinte e uma em numero, se achavam representadas por delegados officiaes ao Congresso. Delegados sem nomeação dos Governos, mas representando as mais notaveis sociedades scientificas e instituções de ensino dessas republicas apresentaram theses e tomaram parte nas deliberações. As memorias e discussões devem ser consideradas portanto, como a expressão de um justificavel trabalho scientifico Pan Americano e possui, por esse motivo, um valor sem igual.

O Congresso foi dividido em nove secções principaes, que a seguir enuméro, com os nomes dos seus presidentes:

I. ANTHROPOLOGIA. W. H. Holmes.

II. ASTRONOMIA, METEOROLOGIA E SISMOLOGIA. Robert S. Woodward.

III. CONSERVAÇÃO DA RIQUEZA NACIONAL, AGRICULTURA, IRRIGAÇÃO E SILVICULTURA. George M. Rommel.

IV. INSTRUÇÃO. P. P. Claxton.

V. ENGENHARIA. W. H. Bixby.

VI. DIREITO INTERNACIONAL, DIREITO PUBLICO E JURISPRUDENCIA. James Brown Scott.

VII. MINAS, METALLURGIA, GEOLOGIA PRACTICA E QUIMICA INDUSTRIAL. Hennen Jennings.

VIII. SAUDE PUBLICA E SCIENCIAS MEDICAS. William C. Gorgas.

IX. VIAS DE COMMUNICAÇÃO, COMMERCIO, FINANÇAS E IMPOSTOS. L. S. Rowe.

Estas secções, por seu lado, eram subdivididas em 45 subsecções.

Mais de 200 delegados das Republicas da America Latina frequentaram as sessões enquanto os Estados Unidos se achavam representados por mais de mil pessoas. As discussões e os relatorios do Congresso attrahiram a attenção de todo o mundo e foi sem duvida a maior assemblea scientifica que se realizou no Hemispherio Occidental e talvez em todo o mundo. Foi sem duvida um idoneo continuador do Primeiro Congresso Scientifico Pan-Americano, que se celebrou em Santiago, capital da Republica Chilena em 1908 e das anteriores assembleas que previamente se tinham realizado, apenas com delegados da America Latina e que se reuniram em annos anteriores no Rio de Janeiro, Montevideu e Buenos Aires. O seu successo foi um resultado logico das reuniões previas na America Latina e do cordial concurso dos Governos da America latina e dos seus homens de sciencia.

A aquelles que não quizerem limitar-se a consultar os volumes que contém as memorias e as discussões e que desejarem conhecer alguma cousa mais dos trabalhos do Congresso e dos resultados por elle alcançados se lhes recommenda a leitura da Acta Final—a exposição geral concernente á mesma—publicada sob a direcção do Sr. Dr. James Brown Scott, Relator Geral do Congresso, e o relatorio do Secretario Geral, preparado pelo abaixo assignado e pelo Secretario Geral Adjuncto Sr. Dr. Glen Levin Swiggett. Nestes trabalhos encontrar-se-hão não sómente a acta final mas tambem um magnifico commentario, a lista dos delegados dos Governos que adheriram, sociedades, instituições de ensino e outras corporações, seguidas de uma cuidadosa historia do Congresso. Estes volumes continuam á disposição dos que os pedirem ao Director Geral da União Pan-Americana, Washington, D. C.

Em conclusão, eu desejo repetir, em duas palavras, como Secretario Geral do Congresso, o meu apreço e reconhecimento, que já tive occasião de exprimir no meu relatorio official, pela cordial cooperação que por todos me foi prestada para levar a bom exito este congresso, desde o Presidente dos Estados Unidos, V. Exa., como Secretario d'Estado, os Senhores Delegados da America Latina e dos Estados Unidos até os diversos funcionarios do Congresso. O grande interesse manifestado pela Comissão Permanente Executiva presidida pelo Sr. William Phillips, ao tempo terceiro Sub-secretario d'Estado, pelo Instituto de Carnegie para a Paz Internacional na pessoa do Sr. Dr. James Brown Scott, assim como a collaboração prestada pela Sr. Dr. Glen Levin Swiggett, como Secretario Geral Adjuncto, constituíram obras basilares para o successo desta reunião.

A União Pan-Americana, instituição internacional sustentada por todas as Republicas Americanas e cujo Conselho de Administração é constituído pelos representantes diplomaticos em Washington e pelo Secretario d'Estado dos Estados Unidos, contribuiu com a sua poderosa influencia para o bom exito do Congresso e me auctorizou a servir de Secretario Geral do Congresso.

Com a maior consideração, subcrevo-me

De V. Exa,
Vor. Mto. Atto.,
(Ass.) JOHN BARRETT,
Secretario Geral.

Exmo. SNR. SECRETARIO DE ESTADO,
Washington, D. C.

WASHINGTON, D. C., 31 de mayo de 1917.

SEÑOR:

En cumplimiento de una recomendación emanada de la Comisión Ejecutiva del Segundo Congreso Científico Panamericano que se reunió en Washington desde el 27 de diciembre de 1915 hasta el 8 de enero de 1916 y gracias a la cooperación al efecto prestada por el Congreso de los Estados Unidos mediante su ley sobre rectificación del presupuesto dictada el 8 de setiembre de 1916, hánse recopilado y preparado para su publicación, bajo la hábil dirección del Sr. Dr. Glen Levin Swiggett, Subsecretario General, las memorias presentadas a dicho Congreso y los debates a que dieron lugar. El presente volumen contiene el informe relativo a la Sección IV, de la cual fué presidente el Sr. P. P. Claxton, miembro de la Comisión Ejecutiva.

En el informe general que ya tuve el honor de presentarle, me fué dable considerar detenidamente la importancia del Segundo Congreso Científico Panamericano, la numerosa concurrencia que al mismo asistió y el elevado mérito de las memorias presentadas y de los debates que en aquel se suscitaron. Por consiguiente, he de limitarme en la presente, destinada a servirle de mera introducción a cada uno de los volúmenes, a algunas consideraciones de carácter general.

En el Congreso estuvieron representadas por medio de delegaciones oficiales las veinte y una repúblicas del Hemisferio Occidental. También asistieron al mismo, tomando participación en sus debates y presentando trabajos personales, delegados particulares de los principales cuerpos científicos y de los institutos docentes de esas mismas repúblicas. En tal virtud, las memorias y los debates mencionados deben ser considerados como la expresión de un amplio esfuerzo científico panamericano, encerrando, por lo tanto, un valor inestimable.

El Congreso estuvo dividido en nueve secciones principales que en seguida paso a enumerar junto con el nombre de sus presidentes. Fueron las siguientes:

I. ANTROPOLOGÍA. W. H. Holmes.

II. ASTRONOMÍA, METEOROLOGÍA Y SISMOGRAFÍA. Robert S. Woodward.

III. CONSERVACIÓN DE LAS FUENTES NATURALES DE RIQUEZA, AGRICULTURA, IRRIGACIÓN Y SELVICULTURA. George M. Rommel.

IV. INSTRUCCIÓN. P. P. Claxton.

V. INGENIERÍA. W. H. Bixby.

VI. DERECHO INTERNACIONAL, DERECHO PÚBLICO Y JURISPRUDENCIA. James Brown Scott.

VII. MINERÍA, METALURGIA, GEOLOGÍA ECONÓMICA Y QUÍMICA APLICADA. Hennen Jennings.

VIII. SALUBRIDAD PÚBLICA Y CIENCIA MÉDICA. William C. Gorgas.

IX. TRANSPORTE, COMERCIO, FINANZAS E IMPUESTOS. L. S. Rowe.

Estas secciones estuvieron divididas, a su vez, en cuarenta y cinco subsecciones.

De las repúblicas latino-americanas asistieron más de doscientos delegados; en tanto que las sesiones del Congreso concurrieron más de mil personas de los Estados Unidos. Los trabajos y debates del cuerpo despertaron universal interés, pues indudablemente fué aquel la asamblea científica más grande que registra la historia del Hemisferio Occidental y probablemente la del mundo. Él fué, en consecuencia, digno continuador del Primer Congreso Científico Panamericano que en 1910 se reunió en la capital de Chile y de los que previamente y con una asistencia exclusivamente latino-americana se habían congregado en Río de Janeiro, Montevideo y Buenos Aires. Su éxito fué consecuencia lógica de las asambleas que anteriormente se habían reunido en la América latina y del cordial concurso que recibió de los gobiernos y de los hombres de ciencia de esa misma parte de América.

A cuantos no quisieren limitarse a consultar los volúmenes que contienen las memorias y los debates y desearan conocer algo más de las labores del Congreso y de los resultados por él alcanzados, se les recomienda la lectura del Acta Final y de la Exposición General concerniente a la misma que escribió el Dr. James Brown Scott, Informante General del Congreso, así como el Informe del Secretario General, prepa-

rado por el suscrito y por el Dr. Glen Levin Swiggett, Subsecretario General del mismo. En estos documentos podrán hallar no sólo el Acta Final y luminosas consideraciones acerca de la misma, sino también la nómina de los delegados y de los gobiernos, sociedades e institutos docentes que tuvieron representación en la Asamblea, juntamente con una relación puntualizada de las labores de la misma. Los que deseen obtener estos volúmenes pueden solicitarlos del Director General de la Unión Panamericana en Washington, D. C.

Como Secretario General del Congreso deseo hacer constar una vez más, antes de concluir, el agradecimiento que en mi informe general expresé por el cordial concurso que de todos recibí para asegurar el éxito del Congreso, desde el Presidente de los Estados Unidos y usted mismo como Secretario de Estado y desde los delegados de la América Latina y de los Estados Unidos hasta los diversos funcionarios del Congreso. El gran interés desplegado por la Comisión Permanente Ejecutiva, que presidió el Sr. William Phillips, a la sazón Tercer Subsecretario de Estado, por la Fundación Carnegie para la Paz Internacional, por el órgano de su Secretario, Dr. James Brown Scott; así como la colaboración del Dr. Glen Levin Swiggett, Subsecretario General, contribuyeron poderosamente a hacer memorable la asamblea. La Unión Panamericana, institución internacional sostenida por todas las repúblicas de América y cuyo Consejo Directivo está formado por los representantes diplomáticos latinoamericanos residentes en Washington y por el Secretario de Estado de los Estados Unidos, contribuyó con su poderosa influencia al éxito del Congreso y me autorizó para que desempeñara las funciones de Secretario General de aquél.

Con sentimientos de la más alta consideración me suscribo

De usted muy atento servidor,

JOHN BARRETT,
Secretario General.

Al Honorable SECRETARIO DE ESTADO,
Washington, D. C.

WASHINGTON, D. C., *Le 31 mai 1917.*

MONSIEUR: Conformément à la recommandation du Comité Exécutif du Second Congrès Scientifique Panaméricain qui a eu lieu à Washington du 27 décembre 1915 au 8 janvier 1916, et par la coopération du Congrès des États-Unis (loi du budget extraordinaire, 8 septembre 1916), les mémoires et discussions de cette grande réunion scientifique internationale ont été recueillis et édités pour être publiés sous l'habile direction du docteur Glen Levin Swiggett sous-secrétaire général. Ce volume contient le rapport de la section IV, dont M. P. P. Claxton du Comité Exécutif était président.

Dans mon rapport officiel qui a été déjà soumis, je me suis étendu sur l'importance du Second Congrès Scientifique Panaméricain, sur le grand nombre de personnes qui y étaient présentes et sur l'excellence de ses mémoires et de ses discussions. C'est pourquoi, dans cette lettre qui, après avoir subi quelques changements sans importance, sert d'introduction à chaque volume, je n'en parlerai que d'une manière générale.

Toutes les républiques de l'Hémisphère Occidental au nombre de vingt-et-une étaient représentées au Congrès. De plus, des délégués à titre officieux envoyés par les associations scientifiques et les institutions éducatives les plus en vue de ces républiques ont soumis des mémoires et ont pris part aux délibérations. On peut donc considérer les mémoires et les discussions comme l'expression d'un grand effort scientifique panaméricain, possédant en conséquence une valeur inestimable.

Le Congrès était divisé en neuf sections principales que nous énumérons ci-dessous, en donnant le nom de leurs présidents.

I. ANTHROPOLOGIE. W. H. Holmes.

II. ASTRONOMIE, MÉTÉOROLOGIE ET SISMOLOGIE. Robert S. Woodward.

III. CONSERVATION DES RESSOURCES NATURELLES, AGRICULTURE, IRRIGATION ET FORÊTS. George M. Rommel.

IV. INSTRUCTION PUBLIQUE. P. P. Claxton.

V. GÉNIE CIVIL. W. H. Bixby.

VI. DROIT INTERNATIONAL, DROIT PUBLIC ET JURISPRUDENCE. James Brown Scott.

VII. MINES, MÉTALLURGIE, GÉOLOGIE PRATIQUE, ET CHIMIE APPLIQUÉE. Hennen Jennings.

VIII. SANTE PUBLIQUE ET SCIENCE MÉDICALE. William C. Gorgas.

IX. TRANSPORT, COMMERCE, FINANCE ET IMPÔT. L. S. Rowe.

A leur tour ces sections étaient subdivisées en quarante cinq sous-sections.

On y comptait plus de deux cents délégués des républiques latino-américaines, et plus de mille délégués des Etats-Unis ont assisté aux réunions. Les discussions et les procès-verbaux du Congrès ont attiré l'attention du monde entier, et il a été sans le moindre doute la plus grande assemblée scientifique internationale de l'histoire de l'Hémisphère Occidental et peut-être même du monde entier, qui se soit réunie jusqu'ici. Venant après le Premier Congrès Scientifique Panaméricain qui s'est réuni à Santiago, capitale du Chili, en 1908, et après ceux qui ont eu lieu précédemment, respectivement à Rio de Janeiro, à Montevideo et à Buenos-Ayres, ces derniers n'ayant que des représentants de l'Amérique Latine, il s'est montré leur digne successeur. Sa réussite a été un logique résultat de ces précédents concours dans l'Amérique Latine et de la sincère et cordiale coopération des gouvernements et des hommes de science de l'Amérique Latine.

Pour ceux qui n'ont porté leur attention que sur les volumes renfermant les mémoires et les discussions, et qui désireraient connaître d'une manière plus approfondie les actes et procès-verbaux du Congrès, ainsi que les résultats qui s'en sont suivis, je leur conseillerai de lire "L'acte Final, Commentaire explicatif," rédigé sous la direction du docteur James Brown Scott, rapporteur général du Congrès, et le rapport du Secrétaire Général rédigé par ce dernier et le docteur Glen Levin Swiggett. En les lisant on n'y trouvera pas seulement l'Acte Final et le commentaire explicatif, mais encore les listes des délégués, des gouvernements qui ont participé au Congrès, des sociétés, des institutions éducatives et autres, en même temps qu'un compte rendu soigné ainsi que l'histoire du Congrès. On peut se les procurer en faisant une demande par écrit au Directeur Général de l'Union Panaméricaine à Washington, D. C.

En terminant, je vais en qualité de Secrétaire Général du Congrès exprimer de nouveau en peu de mots mes remerciements, ce que j'ai déjà fait dans mon rapport officiel pour la part que chacun a eue dans la réussite du Congrès depuis le Président des Etats-Unis, vous comme Secrétaire d'Etat, les délégués de l'Amérique Latine et ceux des Etats-Unis jusqu'aux employés de bureau. Le haut intérêt manifesté par le Comité Exécutif permanent présidé par M. William Phillips, qui était alors troisième Sous-Secrétaire d'Etat, par la Fondation Carnegie pour la Paix Internationale, par l'entremise de son secrétaire le docteur James Brown Scott, et l'aide prêtée dans l'exécution par le docteur Glen Levin Swiggett, comme sous-secrétaire général, ont puissamment contribué à faire de ce Congrès un événement mémorable. L'Union Panaméricaine, administration officielle internationale de toutes les républiques américaines, et dont le Comité d'Administration est composé des diplomates latino-américains à Washington et du Secrétaire d'Etat des Etats-Unis, a usé de sa favorable influence pour assurer le succès du Congrès et m'a autorisé, en qualité de Directeur Général de l'Union, à prendre en mains les responsabilités de Secrétaire Général du Congrès.

Veillez agréer, M. le Secrétaire d'Etat, en même temps que mes respectueux hommages l'assurance de mon entier dévouement,

JOHN BARRETT,
Secrétaire Général.

Monsieur le SECRÉTAIRE D'ÉTAT,
Washington, D. C.

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FOREWORD.

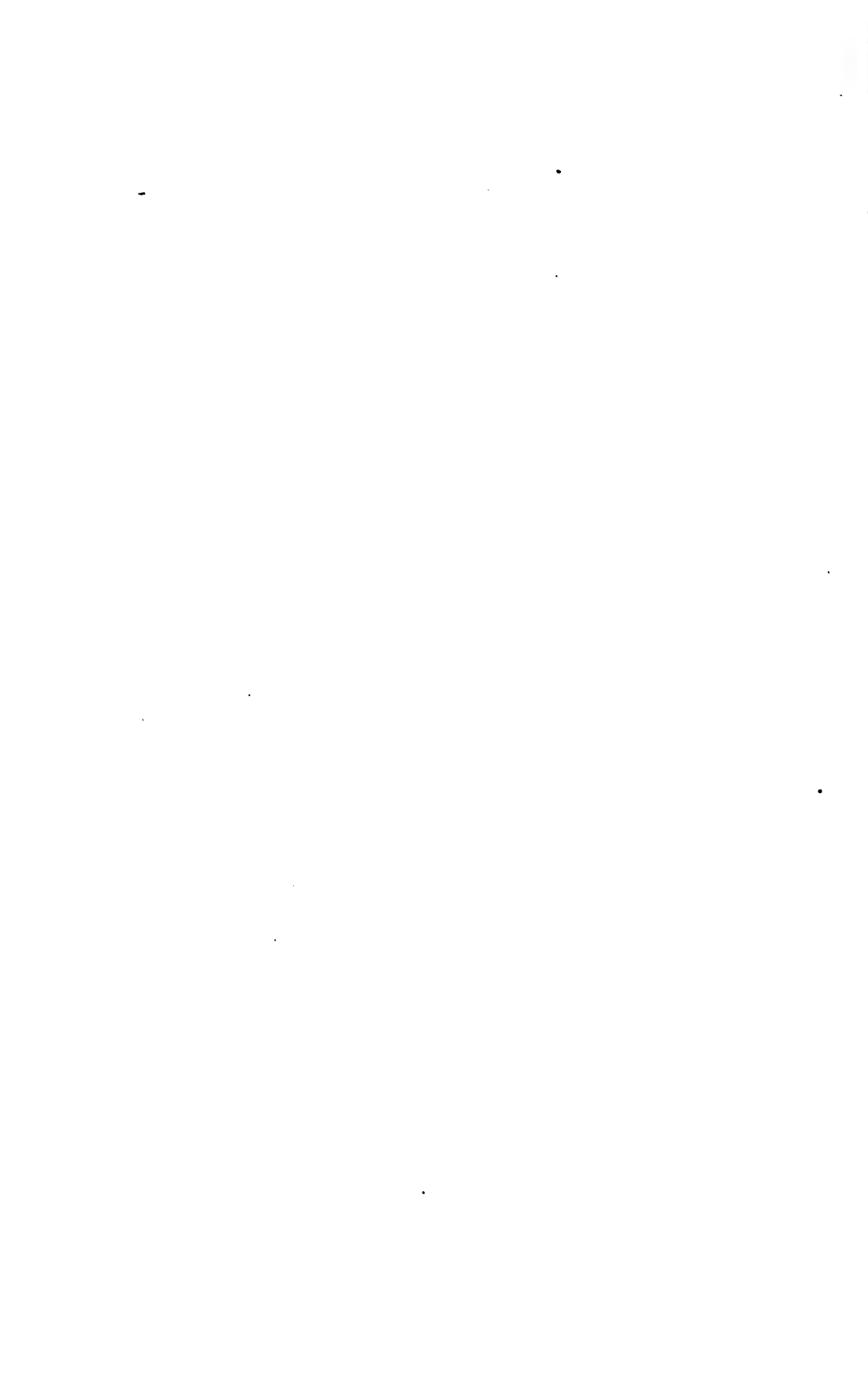
The Second Pan American Scientific Congress, through its section on education, gave to educators of the American Republics an opportunity to meet and know each other and to learn of educational ideals and practices of the several countries; to find out what these Republics have in common and how each is striving to adapt its system of education to the needs of democracy and modern life. In all the meetings of this section there was apparent a desire for a closer relation between the countries represented and for such modifications of the courses of study in their schools as will give to the people of each country a better understanding of the geography, history, resources, language, literature, life, and ideals of all, to the end that there may result mutual helpfulness, good will, and permanent peace among them.

One result of the work of this section was a larger recognition of the principle of democracy in education and of the duty of a democracy to give to all its children and youth full, free, and equal opportunity for such education as will enable them to perform intelligently and well the duties of citizenship, to make an honest living, and to contribute their part to the common wealth.

The discussions of the section and the informal conversation of its members showed clearly that it is very desirable that educators of the American Republics should have some effective means of communication, so that what is best in any one of these countries may, with as little delay as possible, become the common property of all, and that there should be organized a Pan American educational association drawing its membership from the leaders in all grades of education and holding its meetings regularly every two or three years, first in one country and then in another. It was the sense of the section that there should be established in connection with the Pan American Union, or elsewhere, a permanent bureau or office of education to facilitate intercommunication and to provide opportunity for the study of such phases and problems of education as are common to several or all of these countries. It was also the sense of the section that some plan should be perfected for the interchange of professors and students.

I desire to express to all who prepared papers for this section of the congress the sincere thanks and hearty appreciation of the members of the subsection committees and of the vice chairman of the section committee and myself.

P. P. CLAXTON, *Chairman.*



SECOND PAN AMERICAN SCIENTIFIC CONGRESS.

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EDUCATION.

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L. C. MARSHALL, Dean College of Commerce and Administration, University of Chicago, Chicago, Ill.

SECOND PAN AMERICAN SCIENTIFIC CONGRESS.

AIMS AND PURPOSES.

The Congress, in accordance with its high aims and purposes, namely, to increase the knowledge of things American, to disseminate and to make the culture of each American country the heritage of all American Republics, to further the advancement of science by disinterested cooperation, to promote industry, inter-American trade and commerce, and to devise the ways and means of mutual helpfulness in these and in other respects considered the following general program of subjects, divided into appropriate sections and subsections.

SECTION IV.—EDUCATION.

The establishment, present status, and future development of public and private education as carried on in the Republics of the Western Hemisphere; similarity, essential differences, and the interrelation of the various types and grades of education among the constituent members of the Pan American Union; the possibility of Pan American correlation of subjects and standardization in subject and equipment which would permit interchange of professors and students between the American Republics; the emphasis in educational institutions upon subjects and methods of presentation of the same in order to encourage a Pan American point of view, Pan American cooperation and ideals of education; public and private support, administration and supervision, problems and purpose of the different grades of education, particularly in the elementary and secondary periods; coeducation and its problems and possibilities; the function, support and control of special schools established for the training of teachers and higher efficiency in the trades, industries, commerce, agriculture, and the technical and learned professions.

ELEMENTARY EDUCATION.

The determining factors of elementary education and the necessity for uniformity of practice throughout the Pan American Republics.

SECONDARY EDUCATION.

Public support of secondary education conditioned by the character and purpose of instruction given.

UNIVERSITY EDUCATION.

The various types of university education; the function of the State-supported university; the relation of the American university to public service; and the work of governmental administration.

EDUCATION OF WOMEN.

The desirability, essential features, and place of coeducation in the different grades of education as carried on in a democracy.

TECHNICAL EDUCATION.

Engineering education in its relation to education in general and to the different types of technical education in particular; the part that engineering education may play in the industrial and scientific development of a country; educational preparation for the teaching and practice of, and investigation in, the medical sciences; the special character of agricultural education, admission requirements for schools and colleges engaged in its teaching, and the necessary financial support for it; the importance of industrial education, its establishment through local, State, and Federal support, and its coordination and cooperation with the various trades and industries; educational preparation for business, domestic and foreign, as carried on in the commercial nations of Pan America.

RESOLUTIONS AND RECOMMENDATIONS.

The Second Pan American Scientific Congress considered and discussed the subjects set forth in its program in the light of an intellectual Pan Americanism in a series of meetings from December 27, 1915, to January 8, 1916, and adopted resolutions and recommendations pertinent to the work of the nine main sections of the congress.

• The following recommendations refer to Section IV:

ARTICLE 15.

The Second Pan American Scientific Congress believes it to be important that the achievements and influence of the founders of the independence of the American Republics be made known to the peoples thereof, and that the important details of the lives of the liberators and statesmen of the continent be included in courses of study in schools of the American Republics.

ARTICLE 16.

The Second Pan American Scientific Congress recommends that there be established in the universities of the United States chairs

of the history, development, and ideals of the Latin-American peoples, and in the universities of Latin America chairs of the history, development, and ideals of the people of the United States.

ARTICLE 17.

The Second Pan American Scientific Congress urgently recommends that Spanish be taught more generally in the schools, colleges, and universities of the United States and that English be taught more generally in the educational institutions of the Latin-American Republics, and that both languages be taught from the point of view of American life, literature, history, and social institutions.

ARTICLE 18.

The Second Pan American Scientific Congress recommends that the study of sociology in American universities where it is not at present taught be inaugurated.

ARTICLE 19.

The Second Pan American Scientific Congress petitions the Governments of the American Republics to further the interchange of educators of all grades, and of students of university, normal, and technical training, and to encourage both to make visits of instruction to other American countries.

ARTICLE 21.

The Second Pan American Scientific Congress recommends that there be published a series of volumes entitled the "Pan American Library," with the object of popularizing, in the several languages spoken on the continent, the best scientific, literary, and artistic works of American authors.

ARTICLE 22.

The Second Pan American Scientific Congress, confirming the resolution adopted at the First Pan American Scientific Congress of 1908-9, recommends the organization in connection with the Pan American Union of a department of education, which shall—

(a) Be intrusted with the publication, in Spanish, Portuguese, French, and English of such works on education as are of importance to the American countries.

(b) Keep the different Republics in touch with educational progress.

(c) Promote in each country the scientific study of educational problems from both national and American standpoints.

(d) Facilitate the interchange of ideas and information among the teachers of the continent, and in general serve the educational interests of the Americas.

FIRST GENERAL SESSION OF SECTION IV.

PAN AMERICAN UNION,
Tuesday morning, December 28, 1915.

Honorary Chairman, His Excellency CARLOS MARÍA DE PEÑA.

Chairman, PHILANDER P. CLAXTON.

The session was called to order at 9.30 o'clock by the chairman.

Introductory remarks:

By the Chairman of Section IV, Philander P. Claxton.

By His Excellency Sr. Dr. Carlos María de Peña.

Papers presented:

La filosofía científica en la organización de las universidades, by José Ingenieros.

The changes needed in American secondary education, by Charles W. Eliot.

ADDRESS

BY PHILANDER P. CLAXTON,

Commissioner of Education of the United States.

Honorable Delegates to the Second Pan American Scientific Congress, Ladies and Gentlemen: I take great pleasure in welcoming to this our capital city all delegates to this section of the Second Pan American Scientific Congress, and on behalf of the delegates for the United States I welcome with especial pleasure those of you who come from other Republics than our own.

All the countries represented in this congress are much alike in many important respects; all are new and are filled with the energy, the hope, and the vision of youth; all have large natural resources which are as yet developed only to a very small extent; the population of each is sparse as compared with the population of the older countries of the world, but in each the population is rapidly increasing; all are democratic in their form of government and in their life and ideals; in all everything waits on education—industrial progress, social purity, civic righteousness, political strength, spiritual culture—everything pertaining to national greatness and individual

happiness. The most pressing problems of citizenship have to do with the improvement of our schools of all kinds and grades and the extension and strengthening of all means of education.

The development of our natural resources and the creation of material wealth must depend on our scientific knowledge and industrial and technical skill. This holds for us to a larger extent than for all other peoples because of the large ratio of the natural resources to the number of laborers and the consequent need for the constant use of labor-saving machinery. Ours is the task of conquering new continents, felling forests, clearing fields, breaking prairies, redeeming deserts, tunneling mountains, building highways, harnessing water powers, exploiting mines, building cities, and developing domestic and foreign commerce. These tasks require scientific knowledge and industrial skill in high degree for large numbers of our people.

More important still is education for citizenship in our democracies. Democratic government is government by all the people and not by a select few; it is manhood government and not a government of a little father ruling by divine right and benevolently interested in the welfare of his children; it is government by principle and not by personality. In a democracy, to a greater extent than in any other form of government, private weal is dependent upon public welfare, and both public welfare and private weal are dependent upon the intelligence and virtue of all the people. Therefore all who participate in the making of the laws or in their administration, either directly through the ballot or indirectly by making public opinion and influencing public sentiment, should be educated and trained for the duties and responsibilities of democratic citizenship.

Our social life is democratic and tends to become less stratified and fixed and more mobile and fluid. Every individual must therefore have an opportunity for that kind and degree of education which will enable him to contribute his part to the social whole and to obtain the largest degree of social happiness. Every man should be able to look his fellow man level-eyed in the face and feel that he is a man among men; not an inferior among superiors, nor a superior among inferiors, but an equal among equals.

Our cultural and spiritual life are also democratic, and we must not neglect any means that may contribute to its enrichment. It is this phase of our life that is of supreme importance. Even though we should obtain unbounded material wealth and fail in cultural and spiritual wealth, we should be poor indeed. Our task here becomes larger and more pressing. Because of our newness and because our energies have been absorbed by the tasks of a sparse people on a new continent, we have not contributed to the literature, art, and philosophy of the world in the past as we should contribute in the future. As we complete the tasks of pioneer life we shall find more time for

the larger and more important tasks connected with our higher needs. This fuller human culture must be provided in large measure for all, else our material prosperity, our commerce, and industries will become a curse rather than a blessing to us and we shall die in the din and dust of trade.

The material wealth of any of these Republics will depend on the productive power of all its people. If any fall below the maximum of productive power then the total wealth will be diminished by the amount of this deficit. The political and civic life in any one of these Republics will depend upon the intelligence and virtue of all its people. If any fail of full preparation for the duties and responsibilities of citizenship to that extent will the democracy fail in attaining its highest ideals, and to that extent must the civic and political life of the country be lowered. The principle holds also for the social, cultural, and spiritual life and welfare.

The highest meaning and most fundamental purpose of democracy are expressed in equality of opportunity. There can be no complete democracy without this equality of opportunity, and there can be no equality of opportunity in any direction without equality of opportunity in education. If to any children among us are denied equal opportunity with all other children for that kind and degree of education that will best fit them for life, for making a living, and for the duties and responsibilities of citizenship, and they are permitted to grow to manhood or womanhood untrained, then there is nothing which individual or society can do, nothing which man or God can do, to make good the loss. Therefore our schools and other agencies of education must offer to all equal opportunities for human development and human culture, for industrial training, for preparation for citizenship, and for making a good, honest living by some form of work done intelligently, skillfully, and joyously. The sum total of the agencies of the education of every individual must include those forms which make for human culture, for the development of manhood or womanhood, for the preparation for citizenship, and for training for vocational life.

In the United States we like to repeat the assertion contained in our Declaration of Independence that "all men are born free and equal, with certain inalienable rights, among which are life, liberty, and the pursuit of happiness." For us this means not the life of the brute driven by passion, led by instinct, and bound within the prison walls of the senses, but rather full human life, driven by strong purpose, guided by reason, and possessing the freedom of the knowledge of the truth. It means the liberty not of the wild ass of the desert, but of the human being who has learned the freedom of law and the underlying principles of life. It means the happiness that is inspired

by the divine discontent which will not let one rest until he has attained to the best.

We do not believe in any plan of education nor are we willing to accept any scheme of social philosophy that would make of any class of people merely good working cattle or mere industrial machines, to be cast aside when we have been able to invent better machines of wood or steel. We are dedicated to the principle that all have equal right to all that pertains to humanity and to a full share in human culture with all its sweetness and light.

Inasmuch as the duties and responsibilities of citizenship are imposed upon all alike, and since ignorance of the law or of the principles of governmental history or institutional development excuses no one, we must see to it that all are given opportunity to prepare themselves to assume intelligently the responsibilities and to perform wisely the duties of citizenship. Otherwise democracy becomes unjust by placing upon the people burdens which they are unable to bear and from which they would be relieved under other forms of government. As we become more democratic in our economic life we understand better the dignity of labor and also the need that every member of society contribute, by labor of head, hand, or heart, his full share to the common wealth. Therefore our schools must offer to all opportunity for preparation for some useful vocation.

To attain to these ends we must provide elementary and secondary schools for all, with such differentiation and adjustment of courses of study as may be necessary to meet the demands of children of varying ability, and to meet also the varying demands of vocational life. That the schools may be efficient there must be teachers well born, well trained, well educated, and having such skill in their work that the waste of money and time may be reduced to a minimum. For these schools we must find the means of support through just and equitable taxation.

In the United States we have free elementary schools for all. In most of the States the laws require all children between certain ages to attend the public schools, unless it can be shown that equal opportunity for education is given them elsewhere—at home or in private or parochial schools. For secondary education we have approximately 14,000 public and private high schools, with an attendance this year of approximately 1,500,000 pupils. Something more than 25 per cent of the boys and girls in the United States enter our high schools and receive some degree of secondary education. About 10 per cent graduate from a high school of four years based on elementary schooling of seven or eight years, in most cases of eight years. For the preparation of teachers for elementary schools we have nearly 300 normal schools, public and private. For the preparation of

teachers in high schools and for superintendents, supervisors, and directors of education there are more than 200 colleges, departments, or schools of education in our colleges and universities. There are in the United States approximately 600 colleges, universities, and technical schools. These schools had in 1892 a working income of approximately \$17,000,000; in 1914 this working income had increased to more than \$100,000,000. For schools of all kinds we spend approximately \$750,000,000 a year, and the annual expenditure is increasing rapidly. Within the last few years we have done much toward differentiating and adjusting the needs of our schools to the varying needs of the children. There has been a large increase of interest in the education of exceptional children, and we are giving increased attention to vocational training.

Out of this conference there should, I believe, come some kind of Pan American policy of education, and as a result of it education should be lifted high above all other interests in all these Republics. This policy should include, among other things:

1. Equal opportunity for all children for that quantity and quality of education that will prepare them most fully for life, for making a living, and for the duties and responsibilities of citizenship. No child born among us or coming to us from any other part of the world should lack opportunity for preparation for the fullest life, the best living, and the largest service.

2. A closer relation in all educational matters through (a) an exchange of professors and students of higher institutions of learning; (b) some kind of Pan American office or bureau of education to serve as a clearing house for information regarding education and as a center and means of educational propaganda; (c) an intelligent cooperation in educational experimentation to the end that we may finally have a larger body of definite and scientific knowledge of educational principles and methods; (d) a Pan American educational association or congress meeting once in two or three years in some important city in one of these Republics. Such a conference should, of course, hold sessions with the Pan American Scientific Congress in the years in which these congresses are held.

We meet in the Christmas time. The dominant religion in all the countries here represented is the religion of Christ—a religion not of darkness, superstition, blind faith, mechanical obedience, or wild fanaticism, but a religion of life and light and truth and love and service. Among the sayings of the Master are these, which have much significance for us at this time: I am come that ye might have life, and have it more abundantly; ye shall know the truth and the truth shall make you free; a new commandment I give unto you, that you love one another; he that would be greatest among

you, let him be servant of all. Our religion is a religion of love and service to man and to God, and we have come to understand that service to God can be rendered only through service to man. Our religion is a religion of righteousness and justice and peace and abounding joy. It recognizes as no other religion does the dignity and worth of the individual. It holds that the human good is above all other good; that it is the only absolute good. It is impatient of all human waste.

In the spirit of this season and of Him who gives this season its meaning, let us carry on our discussions in this conference, and then having returned to our homes let us work in all these American Republics for the highest good of all, until there shall be in all of them no forgotten man, no outcast woman, no lost waif of a child; no useful talent in any individual neglected and undeveloped. In this direction lie for us the paths of power, of prosperity, and of peace.

ADDRESS

BY HIS EXCELLENCY CARLOS MARÍA DE PENA,

Minister of Uruguay to the United States.

Mr. Chairman, Ladies and Gentlemen: Permit me first to express my appreciation of the high honor conferred upon me by the Executive Committee which organized this Second Pan American Scientific Congress, in inviting me to address you on this most auspicious occasion of the opening session of Section IV. It is, indeed, a great honor to address you, distinguished educators, eminent chancellors, presidents and fellows of universities, and teachers, professors, and special delegates of all America to this Fourth Section on Education—a section so select in its element, and so important by reason of the number and character of the subjects it is called upon to discuss.

But, ladies and gentlemen, I do not claim this honor as personal, for it is extended entirely to my country. I am inclined to attribute it rather to some rumors which, having been heard by the Executive Committee, have aroused their interest and desire to hear something in regard to the relations between the United States and Uruguay with respect to the progress attained by the latter's school organization, and not because of my well-known interest in educational matters. I have been since youth, however, an enthusiastic worker for school reform in Uruguay, and although a veteran, am not yet

retired in spite of my twenty-five years' professorship in the University of Montevideo.

But as these details may not be of interest to this Section, and as I am not here to recount an autobiography, I shall only make this passing personal allusion.

We have now before us programs of far-reaching importance. Time is left to me only to tell you in few words how Pan Americanism may be promoted practically and how Uruguay for more than a third of a century has been doing Pan American work through its schools.

The reformer of the primary schools of Uruguay found that he could do nothing better than to take advantage of your system and introduce in Uruguay models from the schools of Massachusetts; nothing better than to become a follower of Horace Mann; nothing better than to reproduce in part the educational encyclopedia of Henry Barnard; to translate your teachers' manuals; to adopt the most select items of your administrative school organization and to establish them in Uruguay; to avail himself of the treasure of your research abroad and of your experience at home; and with all this, and a clear vision of the future, pour generous wine into a new jar; in other words, pour the best product of your mind upon the virgin and fertile soil of Uruguay.

This huge task was accomplished in Uruguay by my illustrious compatriot, Varela, with all that love and energy that we, Latin-Americans, put into matters of this sort. Varela visited the United States in 1867; and on his own initiative, in 1868, founded in Montevideo the "Society of Friends of Popular Education," whence emanated the reform of the primary schools of Uruguay following the methods of the American schools.

Varela was the apostle and organizer of this great reform, and you may, with very good reason, Mr. President, claim part of that glory, and say that this Uruguayan reformer, to whom we give the name of "Uruguayan Horace Mann," in South American literature, was anointed in Boston, Providence, New York, and Philadelphia to carry the light of your inspiration to the rich and liberal land of Uruguay.

But we were not satisfied with that. After having modeled our schools along American lines and having conformed, as was natural, to the requirements of our own idiosyncracies and characteristic national aspirations—which we have, indeed, and well accentuated at that—we again turned our eyes toward this country of prodigies and wonderful organizations, and in the last four years we have sent new explorers on special missions to acquaint themselves with the progress made during recent years in this land

of practical and innumerable improvements. Our commissioners, both men and women, who were treated by the Government and people of the United States with the utmost courtesy, crossed this country from one end to the other, visited your schools, took courses of study in some of your universities, and returned to Uruguay with an enormous wealth of experience and proud for having been able to visit the States. They carried home with them pleasant recollections of your generous hospitality and friendly welcome to them.

I well know, as we all know, that you are people of progressive spirit, of brave and constant energies, of prodigious initiative. Hence it is natural that you, yourselves, should be most exacting regarding your own educational progress and should be very anxious to hasten and to extend it in all spheres and grades of education, to correct and polish the rough work of each day, as you are yourselves the most severe critics of your own work.

All America is in readiness to cooperate with you in this your noble task of criticism and constant endeavor for improvement, realizing that "on getting knowledge the more we can, we shall know the more," and feel conscious of how small has been the ascent made by us all in comparison with the immeasurable altitudes that yet remain unscaled.

We all know how you are daily increasing the wonderful work of your schools, colleges, and universities. I am among those eagerly following you along this path. I know that in all matters you adopt the best from the outside. I know that you are always transforming your own educational wealth, from the initial step in the merry "kindergarten," in the common schools, in the colleges, to the radiant dome of universities, where the whirl of modern life is disciplined and renewed in the midst of the freshness and attractions of your university parks in which your smiling youth gives vent to his physical energies or reproduces in the stadiums the games and the scenes of ancient Greece. Furthermore, without prejudice to the task of the moment, permit me to say that it is my belief that through the initiatives and the labors of this section there must spring the early celebration of a Pan American Congress of Education; a congress of all schools, general and special; a congress of all universities and of all the educational institutions of America. There is nothing so interesting, so necessary. We should thus broaden and complete the work which this congress will accomplish, and should begin to prepare for the meeting of the Universal Congress of Education, which was to have been held in Philadelphia, but was postponed on account of the war.

We have many problems in common: the general plans of education in all its grades; the general purposes of secondary education and its

social, political, and financial régime; the special purposes of preparatory and professional studies; the methods and systems in the different spheres of education; the general plans of civic education in democracy; the vocational, industrial, and commercial schools; the rural schools; university extension; special education or coeducation for adults and for immigrants; and the cooperation of universities of the Americas. We have many other problems of organization, of school science and art, in which each country of America can furnish a valuable fund of its own experience, indicate deficiencies and needs, and show the way that will bring necessary improvements to new fields of action for human energy.

These congresses aim to establish and strengthen powerful ties of good friendship and harmonious cooperation, of noble rivalry in a work, which is common to all the nations of this continent. We must stand together in the custody and in the increase of the splendid treasures of thought, of scientific and artistic culture, of ethical inheritance bequeathed to us by the generations of the world.

LA FILOSOFÍA CIENTÍFICA EN LA ORGANIZACIÓN DE LAS UNIVERSIDADES.

Por JOSÉ INGENIEROS,

Profesor de la Universidad Nacional de Buenos Aires.

I. EVOLUCIÓN DE LA CULTURA.

Como resultado natural de su experiencia, una sociedad adquiere en cada época "sistemas de ideas generales," que influyen de una manera homogénea sobre el pensamiento colectivo y son aplicados a la solución de los problemas que más vitalmente la interesan.

Ese conjunto de ideas generales constituye su filosofía y presenta varios aspectos. En primer lugar es un "cuerpo de doctrinas," en el que se sintetizan las verdades fundadas en la experiencia; en segundo lugar es un "plan normativo," que establece los medios de conducta individual y de acción social; en tercer lugar es una "previsión de ideales," que elabora futuros perfeccionamientos derivados de la experiencia actual.

La extensión de las doctrinas, normas e ideales que constituyen la filosofía de una sociedad, representa la "cultura social" de un pueblo. En las naciones civilizadas contemporáneas esa cultura tiende a organizarse en las Universidades, que son sus instrumentos naturales de aplicación a los problemas vitales de la sociedad.

Tal es la aspiración de toda Universidad moderna: ser un instrumento de acción social. Pero es indudable que la organización actual de casi todas las Universidades (y especialmente de las hispano-americanas) no llena ese objeto, por dos causas: 1ª no responden al sistema de ideas generales que resulta de las ciencias contemporáneas; 2ª no están especialmente adaptadas a las sociedades en que funcionan.

Podemos expresar mejor estas ideas diciendo que en el plan corriente de las Universidades no caben los nuevos sistemas de ideas generales, y que cada Universidad no llena las funciones culturales más necesarias en su propia sociedad.

El siglo XIX ha introducido en todos los órdenes del saber humano el principio de la evolución, aplicable por igual a todos los fenómenos que son objeto de la experiencia actual y a todas las hipótesis que sirven de fundamento a los ideales futuros. La cultura social está sujeta a ese mismo principio. Sabemos, ciertamente, que nuevos resultados de la experiencia aumentan sin cesar el capital del saber humano, sirviendo a la mejor adaptación del hombre a las partes de corteza terrestre propicias a su existencia y multiplicación. Verdades nuevas rectifican sin cesar a las viejas y aumentan la eficacia humana para la vida social, permitiendo un mejor conocimiento y uso de las fuerzas naturales en beneficio de la sociedad.

Esta evolución de la cultura humana no ha sido continua en el tiempo ni simultánea en el espacio. Cada época ha renovado más o menos totalmente la cultura de las precedentes; cada sociedad ha impuesto variaciones especiales a esa renovación.

A su vez, cada "sistema de ideas" ha correspondido a un orden social: ha nacido y servido "en función de su medio." Los grandes cambios sociológicos han coincidido con variaciones en los sistemas de ideas. El advenimiento de nuevas condiciones sociales ha traído la decadencia de los que ya no correspondían al nuevo aumento de la experiencia y se habían transformado en rutinas mentales.

La crisis universal contemporánea prepara acontecimientos que influirán en la transmutación de la cultura, iniciada hace más de un siglo, en vísperas de la revolución francesa. En las naciones de civilización blanca, la sociedad feudal y la cultura teológica han luchado contra la sociedad democrática y la cultura científica. La lucha secular iniciada en el Renacimiento, y que se continuará todavía durante muchas décadas o siglos, ha pasado por grandes alternativas, en que han chocado opuestos "sistemas de ideas" y en que se han inventado los más absurdos eclecticismos para conciliar lo viejo con lo nuevo, el dogmatismo fundado en el absurdo y las ciencias fundadas en la experiencia.

Es legítimo pensar que en los diez o veinte años que seguirán a la actual crisis de la civilización blanca, se acentuará más definitivamente el predominio de la cultura científica moderna sobre la cultura teológica medioeval.

¿Cuál será la renovación general de la cultura humana? ¿Cuáles sus direcciones generales y sintéticas, es decir, su filosofía? ¿De qué manera tendrán que evolucionar las Universidades, para ser la expresión organizada de la nueva cultura y de la nueva filosofía?

Quien dice cultura nueva, dice nueva Universidad: con nuevos planes, con nuevos métodos, con nuevas aplicaciones.

En su casi totalidad, las universidades hispano-americanas son inactuales por su espíritu y exóticas por su organización. Han sido constituidas imitando modelos viejos y conservan el rastro de la cultura medioeval europea.

Justo es reconocer que, en muchas de ellas, las Facultades que se destinan a la formación de profesionales están excelentemente organizadas y producen abogados, ingenieros, médicos, etc., cuya preparación es muy completa. Pero lo que ha desaparecido, al mismo tiempo que se han desenvuelto esas excelentes Facultades, es la Universidad; actualmente no existe una organización de las escuelas especiales de acuerdo con un "sistema de ideas generales," que sea actual (es decir, científico) y social (es decir, americano).

La Universidad debe ser una entidad viva, pensante, actuante, capaz de imprimir un rumbo a la enseñanza especial de todas sus escuelas; en la actualidad, en casi todo el mundo, la Universidad es un simple engranaje administrativo, parásito de las Facultades especiales. Creo innecesario insistir sobre la diferencia que existe entre una dirección moral y científica y un mecanismo decorativo y burocrático.

Con excepción de las relaciones administrativas, las Facultades especiales son autónomas de hecho. Cada facultad aislada solamente llega a interesarse por un aspecto particular de las cosas y de las ciencias, mirando un fragmento del saber total, un lado de la vida social, y siempre con el criterio incompleto del especialista o del profesional. Se desconoce el trabajo ajeno y no se sospecha la posibilidad de una colaboración. Se olvida que cada grupo de ciencias se renueva aprovechando los resultados obtenidos por las ciencias de otros grupos; ignorar el horizonte de los demás importa estrechar considerablemente el horizonte propio. La organización científica de la Universidad debe consistir en la coordinación del trabajo de los institutos y facultades especiales conforme a un "sistema de ideas generales," implicando la convergencia de todos los esfuerzos hacia determinados fines. Cuanto más se divide el trabajo, más necesario es conservar el espíritu de síntesis. Y si cada Facultad debe dar la competencia necesaria para ejercer dignamente una profesión de utilidad social, no debe olvidarse que ella debe ser, al mismo tiempo, la parte de un todo más amplio y más alto, la Universidad, cuya función consiste en fijar principios, direcciones, ideales, que permitan organizar la cultura en servicio de la sociedad.

Las ciencias contemporáneas, al renovar ciertos dominios de la enseñanza pública superior, han violado la vieja arquitectura universitaria sin reemplazarla por otra nueva. Cada Facultad especial, instituto técnico o escuela profesional, se ha organizado separadamente, prescindiendo de todas las demás; en cambio, no existe una dirección sintética de la cultura, según el nuevo "sistema de ideas generales" que ha reemplazado al antiguo. El desarrollo de las escuelas particulares ha muerto a la vieja Universidad, pero no ha creado todavía la Universidad nueva; la agrupación de altos estudios que se sigue llamando Universidad no responde ya al sistema de ideas que era propio de la teología medioeval, pero todavía no ha sido organizado de acuerdo con la filosofía científica moderna.

II. EL PUNTO DE VISTA CIENTÍFICO Y MODERNO.

Adoptando un punto de vista estrecho—y erróneamente llamado práctico—podría decirse que las naciones modernas solamente necesitan buenas escuelas técnicas destinadas a preparar profesionales competentes. Según ese modo de ver, la Universidad sería inútil; bastaría a las escuelas autónomas y habría que trabajar con toda lealtad por la supresión de las Universidades.

No creo que ningún hombre ilustrado se atrevería a sostener ese programa.

Existe la noción de que la Universidad es útil; pero han cambiado radicalmente las ideas relativas a su organización y a su función social. Según el nuevo concepto; las Universidades deben representar el saber organizado y sintetizar las ideas generales de su época: ideas que son productos de la sociedad, derivadas de sus necesidades y aspiraciones.

Para ello la Universidad necesita adaptarse incesantemente a las variaciones de la cultura y de la filosofía; si no lo hace, deja de ser un instrumento útil para la sociedad y para la civilización, y es un obstáculo antes que un instrumento de progreso.

Los viejos "sistemas de ideas," cuya inexactitud está probada, no pueden servir de modelos para construir los sistemas nuevos; sus síntesis generales carecen de interés constructivo desde que se ha probado la inexactitud de sus elementos constitutivos. No hay error más funesto para la sociedad que confundir la cultura actual con la historia de las culturas precedentes, o la filosofía actual con la historia de las precedentes filosofías.

Las ideas sobre la naturaleza, la sociedad y el hombre, profesadas en otros siglos, correspondían a la experiencia de sus épocas respectivas; las ideas actuales, cimentadas en un caudal de experiencia infinitamente mayor, obligan a plantear y resolver de muy distinta manera todos los problemas naturales, sociales y morales.

Por ese motivo, para que la Universidad pueda cumplir eficazmente su función sintetizadora de la cultura contemporánea, es indispensable que adopte los nuevos puntos de vista de las ciencias y modifique el plan general de su organización.

Estos puntos de vista son absolutamente superfluos para los que siguen llamando Universidades a los grupos administrativos de Facultades e Institutos técnicos especiales. Pero es necesario no olvidar que la dirección de las ideas generales en nuestra época implica un nuevo modo de plantear, tratar y resolver todos los problemas sociales y humanos; y semejante cambio definitivo, en todos los órdenes de la cultura, necesita reflejarse sintéticamente sobre la estructura y función de las Universidades.

Los nuevos "sistemas de ideas generales" serán esencialmente antidogmáticos y su función será esencialmente de aplicación social. Las ciencias físicas procurarán conocer cada vez mejor el sitio de la tierra entre los otros cuerpos del universo que sobre ella influyen y el sitio de cada país en la tierra con relación a los otros países que influyen sobre sus condiciones, como ambiente apropiado a la vida humana; el estudio de la configuración geográfica y de los otros seres vivos que habitan cada región será el fundamento para apreciar las condiciones de existencia de cada raza o nación humana que la habite: el suelo, la fauna y la flora son los elementos esenciales para la adaptación y subsistencia de una sociedad humana en una zona cualquiera de la superficie de la tierra. Las ciencias biológicas darán la noción exacta de lo que es la humanidad como especie zoológica y el hombre como individuo de esa especie; ellas enseñarán a conocer el desarrollo de sus funciones psíquicas destinadas a la mejor adaptación y supervivencia de las variedades y razas que componen la especie. Las ciencias sociales, partiendo de las precedentes, mostrarán las causas y resultados de la asociación de los individuos en la lucha por la vida, el crecimiento de la solidaridad social dentro de cada sociedad y entre las diversas sociedades, la formación de la moral en cada agregado social como resultado de su propia experiencia, y de las hipótesis colectivas sobre el ideal moral, abstractamente representado por la virtud individual y la justicia social.

Fácil es comprender que estos puntos de vista no están dirigidos a propiciar ninguna reforma administrativa, técnica, jerárquica o burocrática de las Universidades actuales; creo necesario renovar los fundamentos, los métodos y la orientación de todos los elementos de la cultura social, reemplazando el viejo sistema de ideas por el nuevo.

III. EL PUNTO DE VISTA SOCIOLOGICO Y AMERICANO.

Además del criterio científico y moderno, debemos tener en cuenta el punto de vista nacional para cada universidad y el punto de vista americano para todas las de nuestro continente.

Nuestras nacionalidades se constituyen diversamente de las naciones orientales y europeas, en otro medio y con otra amalgama inicial. El ambiente, los elementos étnicos en él refundidos, los orígenes de su cultura, las fuentes de su riqueza, la evolución de los ideales directivos, todo lo que converge a plasmar una mentalidad nacional, difiere en mucha parte de los modelos conocidos. Por eso la renovación de las ideas generales—incesante en la humanidad, aunque distinta en cada punto del espacio o momento del tiempo—se operará en el continente americano con ritmo diverso que en las naciones formadas o dirigidas por elementos y tradiciones que no son los nuestros.

No implica ello que nos falte una tradición cultural; significa que la existente es pequeña. Y si esto puede ser motivo para no envanecernos del pasado, como acostumbra los que no tienen porvenir, bien podría serlo de regocijo: es de óptimo presagio para un mañana inminente. Nos faltan las malas rutinas y el vicio teológico medioeval, que tanto pesan sobre las naciones que están por cerrar su ciclo en la historia humana; tenemos, en cambio, el pie ligero para encaminarnos hacia eras nuevas y ocupar un puesto de avanzada en la cultura humana, que los siglos renuevan sin descanso.

No tendremos el trabajo de olvidar: lucha agotadora para los que viven del recuerdo. De la experiencia científica contemporánea tomaremos todo lo que sirva, desechando cualquiera filtración dogmática que la contradiga; lo que sea futuro, en el mundo de la experiencia y del ideal, podremos sembrarlo en nuestra virgen mentalidad, libre de ideales muertos que nos impidan sembrar ideales vivos.

Cuando esa hora llegue—que llegará, en años o en siglos—las nuevas razas americanas tendrán sistemas de ideas generales propios e inconfundibles; y serán sus filósofos aquellos genios que sepan expresar el sentido nuevo de los problemas que siempre estuvieron implicados en toda filosofía: de la nueva experiencia americana saldrán ideas e ideales que constituirán la filosofía propia de estos continentes.

La cultura general de la humanidad, además de variar de siglo en siglo, se intensifica y especializa diversamente en unos u otros pueblos; su centro de mayor irradiación nunca ha sido fijo, emigrando de raza en raza, de nación en nación. Los intereses creados en cada sociedad madura, se han convertido siempre en obstáculo para el florecimiento de los intereses nuevos; la verdad imperfecta de ayer se opone a la verdad de hoy, que se opondrá a su vez a la verdad menos imperfecta de mañana. Por eso las sociedades de más reciente formación son las más propicias a los nuevos progresos de la cultura y al advenimiento de los nuevos “sistemas de ideas.”

Los problemas de la filosofía son hablados, por cada época, en un idioma nuevo. Las razas viejas, y sus filósofos, tienen ya su idioma enmohecido y siguen pensando en él; las nuevas, que aún no tienen definido uno propio, aprenden a pensar en el de su época. En la continuidad de la reflexión humana sobre los grandes problemas filosóficos que son el coronamiento de la experiencia científica, las razas viejas no consiguen pensar con un idioma nuevo (si lo hacen, no pierden el acento originario) y van pasando la antorcha simbólica a las razas jóvenes, que lo adoptan más fácilmente y en él expresan sus nuevas maneras de pensar, hasta conformarse a un tipo nuevo y crearse “sistemas de ideas” más conformes a la experiencia de su época.

Ninguna sociedad humana ha conservado perennemente la hegemonía de la cultura. La historia de la filosofía remonta hasta las civilizaciones primitivas, toma grandes nombres en Oriente, se detiene en Grecia, observa en Roma y asiste al crepúsculo transitorio en que se constituyen las teologías medievales; renace con el espíritu y los métodos de las ciencias, ora en Italia, ora en Francia; se desenvuelve con solidez en Inglaterra y se abstrae confusamente en Alemania, hasta encontrar un homogéneo equilibrio en la Europa occidental contemporánea, inquietada por el conflicto entre las teologías medievales que aún perduran y las ciencias modernas que comienzan a consolidarse.

Pero un hecho fundamental aparece en la historia de la civilización en los últimos siglos. Dos grandes corrientes emigratorias de razas blancas europeas consiguen arraigarse en el continente americano, ocupando sus zonas templadas; los europeos blancos desalojan a los indígenas de color e inician la formación de razas y nacionalidades nuevas, confinando poco a poco a las razas autóctonas en las regiones intertropicales. Esos dos gajos de la civilización europea, adaptados a nuevas condiciones del medio, engendran variedades de las razas blancas originarias, variedades que andando el tiempo se definirán como nuevas razas americanas.

Primera en constituirse, la septentrional crea en los Estados Unidos un poderoso centro de civilización, con una nueva manera de pensar, con nuevos “sistemas de ideas” que caracterizan una nueva cultura y contienen implícitamente los elementos de una nueva filosofía. Con el cetro de la civilización blanca recogen ellos la antorcha simbólica; su raza en formación encuentra “sentidos nuevos” a los problemas filosóficos: con Emerson la religión naturalista del ideal moral, con James la adaptación de la verdad en función de su tiempo y de su medio social, etc.

Hay, también, otra raza blanca en formación, distinta de ella, en la zona templada de la América meridional. Cuando haya afirmado sus características, hoy apenas esbozadas, ¿por qué no dará algún “sentido nuevo” al pensamiento humano, planteando

o resolviendo originalmente algunos de los problemas filosóficos que en todo tiempo han inquietado a la humanidad?

En las nuevas razas americanas no han arraigado gérmenes seniles; sus manos están libres para, en la hora oportuna, asir la antorcha de la cultura venidera. Cuando ellas lleguen a consolidar su nuevo tipo de cultura, elaborando nuevos sistemas de ideas generales, habrá en sus doctrinas, a no dudarlo, algo nuevo y que les será exclusivo: el espíritu "americano," en el que podrán distinguirse matices particulares según los climas y las nacionalidades, que serán variedades de adaptación a las diferencias del ambiente natural y social.

No quiere esto decir que todo podrá ser original en el tipo de su cultura y en el pensamiento de sus filósofos; significa, simplemente, que toda nueva raza o sociedad plantea constantemente problemas que le son propios y modos de ver que la distinguen, fundándose en las peculiaridades inherentes a su experiencia propia. No hay, sin duda, una ciencia europea y otra americana, una verdad distinta para cada raza, una cultura y una síntesis filosófica específica de cada continente; el conocimiento sintético de la naturaleza en que vivimos y la elaboración de ideales humanos como resultado último de la experiencia, son una obra de progresiva integración, en la que se suma el esfuerzo de todas las razas de todos los tiempos. Pero los aspectos experimentales e ideales de la cultura humana se presentan diversamente según el punto de vista desde donde se los observa, su función es distinta en cada medio, e impulsa desigualmente a plantear y resolver problemas que en cada raza o sociedad son distintos; por eso cada una, al constituir su mentalidad propia, al construir su "sistema de ideas generales," orienta en algún sentido nuevo la común sabiduría de su época. Concebimos, pues, los "ideales americanos" como el sentido nuevo que las razas blancas nacientes en estas partes del mundo podrán imprimir a la experiencia a los ideales de la humanidad.

IV. DIRECCIONES GENERALES DE LA FILOSOFÍA CIENTÍFICA.

Las nuevas nacionalidades que se están formando en América se encuentran en condiciones favorables para asimilar la cultura científica; constituidas al acentuarse la declinación del feudalismo europeo, pueden adoptar en la dirección de sus altos estudios un criterio filosófico radicalmente distinto del europeo que se formó en la Edad Media.

Las humanidades clásicas tendían a ejercitar el ingenio en una elegante gimnasia espiritual, juego de imaginación y de retórica, que se desarrollaba principalmente en el comentario y la glosa del pensamiento, llamado clásico, de los antiguos. Ese culto de lo que otros hombres pensaron, en otro tiempo y en otro medio, impedía hacer de nuevo lo que ellos habían hecho: construir el saber sobre las ciencias de su época. Y el objeto esencial de ese viejo humanismo no era enseñar a pensar bien, observando y experimentando, sino enseñar a hablar bien sobre lo que otros pensaron, sin pensar por cuenta propia, sin observar ni experimentar.

Los problemas de la naturaleza y de la sociedad, que las viejas humanidades planteaban con sofismas y resolvían con palabras hábilmente evasivas, pueden hoy plantearse y resolverse con otros criterios y con otros métodos. Las ciencias físicas, sociales y biológicas han renovado toda nuestra concepción del universo, de la sociedad y del hombre; los problemas, planteados ahora de muy distinto modo, exigen ser estudiados por espíritus científicos, es decir, por hombres que tengan un sentido de la verdad fundado en la experiencia, que deseen conocerla de manera clara y exacta, y que sepan utilizar los métodos menos inseguros para alcanzarla en cada dominio.

Este nuevo tipo de cultura consolidará necesariamente una filosofía esencialmente científica e imprimirá nuevos caracteres a la Universidad, permitiendo unificar las ideas generales de las ciencias y restaurar las síntesis filosóficas de conformidad con los resultados de la experiencia actual.

Esa renovación es indispensable para ordenar eficazmente los dominios particulares de la Universidad, representados por sus Altas Escuelas Técnicas y sus Facultades. La nueva orientación general, el nuevo "sistema de ideas" es lo esencial; de otro modo las partes procurarán en vano ir hacia adelante mientras el conjunto se mueve hacia atrás o permanece estacionario.

Cuando hablamos de un nuevo tipo de cultura como base de una nueva organización de la universidad, nos referimos a principios generales bien definidos. Las palabras "filosofía científica" implican una afirmación de criterios, de métodos y de ideales, absolutamente distintos de los profesados por las filosofías especulativas, místicas o literarias de todos los tiempos. Y sería absurdo seguir diciendo que una Universidad debe ser el reflejo de una idea o de un pensamiento general, mientras no se comience por afirmar netamente cual es la idea o el pensamiento que debe servirle de base y de armazón.

La nueva filosofía que surge del desarrollo científico contemporáneo está llamada a transformar el concepto, el plan y el método de la precedente. En la actualidad sería absurda la pretensión de cultivar la filosofía ignorando los resultados generales de las ciencias; por tal camino la convertiríamos en estéril gimnasia dialéctica o en pura fantasía literaria.

La cultura moderna, al cambiar los fundamentos de la antigua filosofía especulativa, no niega sus grandes problemas; los plantea de otra manera. No cierra los ojos ante las cuestiones insolubles; se acerca a ellas por caminos más seguros. No busca las verdades lejanas de la experiencia siguiendo métodos falsos y guiada por premisas indemostradas; concibe la filosofía *sobre* las ciencias y nunca *fuera* de las ciencias. Y si a sus problemas y cuestiones conviniera reservar el nombre de metafísica, la filosofía científica aspiraría a constituirse como una simple y pura metafísica de la experiencia.

Las conclusiones más generales de la experiencia científica son la premisa natural de toda elaboración filosófica; los datos de las ciencias físicas, biológicas y sociales nos permitirán transmutar radicalmente los géneros clásicos de la filosofía.

La formación de ideas generales, en una raza o en un filósofo, es un resultado natural y progresivamente adquirido. La experiencia no se improvisa, ni pueden improvisarse sus conclusiones; ella pone sus bases en la observación y el experimento, que han permitido la constitución de las ciencias de la naturaleza, desde que los renacentistas se emanciparon del dogmatismo teológico. Los ideales—faros de toda evolución cultural—son anticipaciones hipotéticas sobre los resultados de la experiencia venidera, tanto más legítimos y eficaces cuanto mayor es su fundamento en la presente. Un ideal es un esfuerzo imaginativo hacia la perfección, y ésta es aquella parte del presente que sobrevive para seguir evolucionando en el porvenir.

Afirmamos el valor de los métodos científicos para dar una inseguridad cada vez menor a nuestro conocimiento del medio en que vivimos; y donde las ciencias no llegan, partiendo de sus últimos resultados, procuramos explicar lo desconocido imaginando hipótesis legítimas, es decir, que no contradigan la experiencia.

Sabemos que los métodos científicos no permiten resolver todos los enigmas que tientan nuestra curiosidad; cada problema resuelto equivale a cien nuevos problemas planteados. Pero el resuelto queda, y cada día sabemos algo más que el anterior, aunque no agotemos el conocimiento de las cosas. Es de ignorantes repetir que nada se progresa en la solución de los grandes problemas en que otrora distraían sus ocios los filósofos. Cuando sobre la mecánica del universo se dice que el antiguo Oriente conocía la topografía celeste lo mismo que nosotros, se afirma una cosa falsa, revelando no haber visto una carta astronómica antigua y una moderna, pues en ésta figuran mil veces más estrellas. Lo mismo ocurre con el problema del alma y la estructura del cerebro; antes se sabía que éste constaba de dos hemisferios reunidos por su base y surcados por circunvoluciones; pero hoy conocemos en detalle la topografía de las células y fibras que componen la más pequeña zona de esos órganos

maravillosos, y hemos aprendido que de esa estructura dependen las funciones del entendimiento.

Las ciencias de la naturaleza abarcan todos los "problemas reales" que se refieren al universo, al planeta que habitamos, a la vida, a la función de pensar, a la evolución de la humanidad; los abarcan aunque no los resuelvan; sus métodos indican el camino más recto para resolverlos; sus resultados permiten imaginar hipótesis legítimas que los exceden, sin contradecirlos. En cambio las ciencias nada saben de los "problemas verbales" planteados durante veinte o cincuenta siglos por filósofos forzosamente ignorantes, maguer fuesen geniales; sus falsos problemas se resuelven demostrando que están absurdamente planteados, por ignorancia de ciertas premisas elementales.

El rastro más hondo que ha dejado la cultura teológica medioeval en la moderna cultura científica, es la división entre las "ciencias naturales" y las "ciencias morales." ¿Quiere, con ello, significarse que estas últimas no son "naturales"? ¿Podrían ser, acaso, "artificiales"? ¿O la moralidad constituye un orden de fenómenos ajenos a la naturaleza? Basta formular claramente estas preguntas para comprender que la división sería absurda si pretendiera ser real; es, simplemente, una división nominal, conservada de la filosofía antigua en abierta oposición con los resultados de la experiencia moderna.

Fácil es prever que los nuevos estudios sobre los géneros clásicos de la filosofía, determinarán una transmutación radical de los mismos y darán una "nueva arquitectura" a los sistemas filosóficos elaborados conforme al espíritu y los métodos de las ciencias. La psicología, la lógica, la moral y la estética se refieren a procesos mentales individuales y colectivos, abarcados hoy totalmente por la psicología y la sociología. Todos ellos se concretan a estudiar aspectos diversos de la experiencia individual y social, cuyo estudio, conforme al método evolutivo y genético, constituirá el problema fundamental de las nuevas "humanidades" y transformará definitivamente las ciencias morales en ciencias naturales.

Sabemos ya que el hombre es un ser viviente y que todas sus funciones mentales son resultado de su actividad biológica en función del medio; esa concepción naturalista obligará a tomar los datos de las ciencias biológicas como fundamento de la psicología. La correlación entre las formas y las funciones es ya un principio cardinal de todas las disciplinas biológicas; la función de pensar se desenvuelve en los seres vivos en la exacta medida en que se complican los órganos y tejidos correspondientes; la fisiopatología experimental y la anatomía patológica, nos enseñan que la perturbaciones funcionales corresponden siempre a lesiones desintegrativas de los órganos; las reacciones químicas de los tejidos alterados nos son ya familiares baj el microscopio. Todo ello nos permite comprender que los antiguos misterios del "espíritu" eran una simple consecuencia de nuestros imperfectos métodos e instrumentos de observación. La psicología, reemplazando sus antiguos "problemas verbales" por "problemas reales," ha ascendido al rango de una ciencia natural que estudia la formación de la experiencia.

En la nueva arquitectura de la filosofía científica su rango jerárquico variará radicalmente con relación a los tres géneros filosóficos que estudian las experiencias particulares y elaboran sus ideales respectivos. La lógica, la moral y la estética son dominios especializados dentro de la experiencia humana, cuyo conjunto es abarcado por la psicología.

Cuanto mayor sea la actual experiencia lógica, más segura será la tabla ideal de valores que oriente las creencias del individuo y las verdades de la cultura colectiva; la más honda experiencia moral contribuirá mejor al advenimiento de la dignidad en el hombre y la justicia en la nación; una mayor vastedad de la experiencia estética pondrá emociones más duraderas en la belleza que el artista forja y aumentará la armonía que sienten las razas dentro de su naturaleza.

La legitimidad de esos ideales, para los individuos y para las sociedades, depende de su correlación con la realidad futura, que es perfección de la presente. En un nuevo sistema, que llamaríamos "idealismo fundado en la experiencia," esta última sería el fundamento de los valores lógicos, estéticos y morales, midiéndose también por ella los valores ideales que la exceden.

La sistematización de estos valores, que sobrepasan la experiencia posible, constituiría la explicación verosímil de lo que en cada época permanece inaccesible a las ciencias: es decir, una metafísica de la experiencia, fundada en ella como los otros cuatro géneros filosóficos.

Recontruidos así el plan y la arquitectura de la filosofía, subvertida la jerarquía clásica de sus géneros, renovados sus métodos, suprimidos sus problemas falsos, excluidas sus preocupaciones tradicionales, en ella tendrán los filósofos un campo más fecundo para ejercitar su pensamiento: conocer mejor a la humanidad y al mundo en que ella vive, para inducir orientaciones propicias a su mayor bienestar. Saber es prever.

Las ciencias son impersonales. El principio de autoridad no puede ya imponer errores; la aplicación de los métodos científicos impedirá que el pensamiento futuro incurra en nuevos dogmatismos, que obstruyan el camino de la experiencia o del ideal.

"La filosofía científica—hemos escrito—es un sistema de hipótesis fundado en las leyes demostradas por las ciencias particulares, para explicar los problemas que exceden a la experiencia actual o posible."

"Es un sistema en formación continua. Tiene métodos, pero no tiene dogmas. Se corrige incesantemente, conforme varía el ritmo de la experiencia."

"Elaborada por hombres que evolucionan en un ambiente que evoluciona, representa un equilibrio inestable entre la experiencia que crece y las hipótesis que se rectifican."

"Partiendo de la experiencia, la imaginación elabora creencias acerca del humano devenir. Al antiguo idealismo dogmático, constituido por 'ideas' rígidas y aprioristas, la filosofía científica opondrá un idealismo experimental, compuesto de 'ideales' incesantemente renovados, plásticos, evolutivos como la vida."

Esta orientación es impersonal, como las ciencias mismas. No es un esquema, es un camino. Por él marcharán generaciones durante siglos.

V. EL NUEVO PLAN DE LA UNIVERSIDAD MODERNA.

¿Cuál es el camino para alcanzar prácticamente ese resultado? Sería, sin duda, prácticamente imposible reorganizar fundamentalmente, por decreto, las Universidades existentes, pues sus Facultades tienen intereses que nadie se atrevería a remover. Por otra parte, además de su función profesional, cada Facultad tiene su mentalidad propia, fundada en diferencias naturales que no podrían borrarse, ni convendría hacerlo aunque se pudiera; lo pertinente es infundirles el espíritu común de la época y del medio, haciéndolas converger hacia los nuevos métodos y direcciones científicas. Sin necesidad de una subversión brusca, puede efectuarse una evolución gradual, no sujeta a un plan definitivo o inmutable; a medida que se realice, la experiencia sugerirá las variaciones convenientes; después irá adaptándose a su medio social (que varía constantemente) y a los adelantos científicos (que son incesantes).

En síntesis: creo que los institutos existentes pueden y deben usarse para ir dando a las Universidades una nueva arquitectura espiritual, conforme al nuevo sistema de ideas generales.

Paso a explicarme.

Cada Facultad consta actualmente de dos clases de estudios: los técnicos o profesionales y los generales o científicos.

La distinción es fácil: en las facultades jurídicas es profesional el derecho de minas y es general la sociología; en las médicas es profesional la anatomía topográfica y es

general la fisiología; en las físico-matemáticas es profesional la resistencia de materiales y es general la física; etc.

Cada Facultad especial puede tener dos órdenes consecutivos de estudios y puede expedir dos clases de títulos: el uno habilita para el ejercicio profesional (abogado, ingeniero, médico, etc.) y el otro constituye el doctorado respectivo (en Ciencias Jurídicas, Biológicas, Físico-Matemáticas, etc.).

Para el primero basta cursar un plan técnico establecido por cada Facultad; para el segundo, además del perfeccionamiento en los estudios propiamente científicos de la Facultad propia, creo que sería indispensable cursar las materias generales de las otras Facultades.

Según este modo de ver, cada carrera profesional sería organizada por su Facultad respectiva, pero los doctorados de altos estudios serían organizados por la Universidad. Las Facultades prepararían técnicos en un dominio especial; la Universidad, hombres de ciencia sólidamente preparados por una cultura general en las otras disciplinas científicas.

Este primer aspecto del problema, cuya practicabilidad no puede ponerse en duda necesita complementarse con otro, que, en mi concepto, es fundamental.

El verdadero instrumento científico de la nueva Universidad, adaptada al tipo de cultura moderno, debería ser una Facultad que existe ya en muchas universidades y que podría organizarse sin erogación sensible en las que aun no la tienen: la Facultad llamada de "Ciencias Morales," de "Humanidades" o de "Filosofía y Letras."

Donde actualmente existe—no lo ocultemos—es una Facultad de lujo; sus profesores son prestados por las otras facultades, sus alumnos escasean, su función es casi nula. Con buen propósito algunas universidades han optado por convertirlas en institutos superiores de pedagogía.

Esta Facultad representa, sin embargo, la arquitectura esencial de la Universidad antigua; pero hoy se ha hecho inútil y es una prolongación de la cultura medioeval entre las otras facultades especiales que procuran difundir la cultura científica moderna. Su concepto filosófico (preescindiendo de algunas cátedras especiales que se le incorporan sucesivamente en todas las universidades, rompiendo la unidad de su vieja arquitectura) es todavía el antiguo: estudiar la filosofía independientemente de las ciencias y en relación estrecha con las disciplinas históricas y literarias.

Es en este dominio particular de las llamadas "ciencias morales" donde puede efectuarse la transubstanciación de la Universidad.

Tal como suele estudiárselas actualmente, las disciplinas filosóficas no suelen tener de ciencias más que el nombre y merecen el que justamente suele dárseles de "ciencias de papel." En efecto, son historias, glosas, críticas, comentarios, de los sistemas de ideas generales propios de otros siglos y de otros medios, que fueron la filosofía del saber de entonces, pero que ya no tienen nada común con la filosofía contemporánea que es propiamente científica con relación al saber moderno y social con relación a las necesidades de las naciones.

Lo más importante en la reorganización de las Facultades de Filosofía consistirá en transformarlas en organismos destinados a la síntesis de las ideas generales que excedan los dominios particulares de cada Facultad profesional.

Para este objeto, los estudios de Filosofía—(además de los históricos y literarios que siempre le serían propios)—debieran cursarse en las diversas Facultades científicas, comprendiendo las materias generales de todas ellas, con exclusión de las técnicas o profesionales.

El doctorado en Filosofía se obtendrá cursando las materias generales de las facultades de Ciencias físico-matemáticas, jurídico-sociales, médico-biológicas, etc. No se trataría de enseñar todos los detalles particulares de cada ciencia y todos los aspectos técnicos de las distintas profesiones, sino de suministrar sistemáticamente los grandes resultados de las ciencias, formando un criterio general y adquiriendo un método

que más tarde podría ser aplicado a los campos de investigación científica o filosófica que cada cual desee explorar. Se enseñaría, de esa manera, a mirar la realidad y a inferir los posibles perfeccionamientos de la adaptación de la vida humana a la naturaleza, haciendo trabajar la imaginación sobre la base de la realidad y enseñando a elaborar los ideales sobre la base de la experiencia.

Daríamos así a la Universidad el espíritu de generalización y de síntesis del que tienden actualmente a apartarse las Facultades profesionales, al mismo tiempo que reemplazaríamos los restos agónicos de la filosofía medieval por los resultados ilimitados y siempre renacientes de la filosofía científica.

Los problemas esenciales de la filosofía serían estudiados con criterios y métodos actuales.

El problema del Universo y de la materia se comprendería con el auxilio de las disciplinas físico-matemáticas, únicas que pueden ayudar a resolverlo.

El problema de la vida en general, y de la humana en particular, sería abordado con los métodos de las ciencias biológicas; y las funciones todas del hombre, considerado como un ser vivo que se adapta a un ambiente físico, encontrarían en ellas su punto de partida natural.

El problema de la vida social, con todos sus aspectos innumerables y siempre variables en cada particular sociedad humana, serían estudiados con los criterios modernos de las disciplinas sociológicas, cuyos horizontes se renuevan sin cesar.

Esas bases son indispensables para que los estudios filosóficos dejen de ser una inútil prolongación de la filosofía medieval. Con ello se evitará la situación ridícula de las actuales Facultades de Filosofía, en que se discute del Universo sin saber astronomía, de la materia sin saber física, de la vida sin saber biología, del hombre sin saber antropología, del alma sin saber fisiología y del ideal sin conocer lo real.

Hombres que sepan sociología, biología y física—para usar palabras representativas de las “ciencias de la naturaleza”—serán más útiles a la sociedad que hombres únicamente ilustrados en las viejas “ciencias de papel” que apartan de toda experiencia y obstruyen todo progreso cultural.

La ciencia no es un deporte de lujo, sino un instrumento de economía social. La cultura no es un adorno de pocos elegidos, sino la preparación para el ejercicio de una función social. La filosofía no es una técnica para disputar sobre lo que se ignora, sino un proceso de unificación de ideas generales para iluminar el campo de lo conocido. La universidad no es un cónclave misterioso de iniciados, sino el vehículo para aumentar la capacidad del hombre y de la sociedad frente a la naturaleza, contribuyendo a la felicidad de los hombres sobre la tierra.

En este sentido, la renovación de la Universidad es un problema de moral y de acción. Hará más dignos a los hombres, poniendo en sus manos más verdad; hará más justa a la sociedad, apartándola de errores contrarios a la solidaridad humana.

Ignoro si transcurrirá un año o un siglo antes de que las universidades se organicen según esta nueva arquitectura filosófica; es ya un síntoma alentador que las primeras palabras pronunciadas en esta asamblea científica de naciones jóvenes, enuncien el problema teórico y sugieran una solución práctica. Cuando estas ideas lleguen a convertirse en realidad, la Universidad comenzará a existir como síntesis de las Facultades especiales, de igual manera que la Filosofía existe como síntesis de las Ciencias.

THE CHANGES NEEDED IN AMERICAN SECONDARY EDUCATION.

By CHARLES W. ELIOT,

President Emeritus of Harvard University.

The best part of all human knowledge has come by exact and studied observation made through the senses of sight, hearing, taste, smell, and touch. The most impor-

tant part of education has always been the training of the senses through which that best part of knowledge comes. This training has two precious results in the individual, besides the faculty of accurate observation—one the acquisition of some sort of skill; the other the habit of careful reflection and measured reasoning which results in precise statement and record.

A baby's assiduity in observation and experimentation and the rapidity of its progress in sense training are probably never matched in after life.

The boy on a farm has admirable opportunities to train eye, ear, and hand, because he can always be looking at the sky and the soils, the woods, the crops, and the forests, having familiar intercourse with many domestic animals, using various tools, listening to the innumerable sweet sounds which wind, water, birds, and insects make on the countryside, and in his holidays hunting, fishing, and roaming.

The fundamental trades, such as those of the carpenter, mason, blacksmith, wheelwright, painter, hand leatherworker and shoemaker, have provided immensely valuable education for the human race, and have, indeed, been the chief means of raising barbarous peoples to a condition of approximate civilization. To-day, the teaching of those trades, without much use of machinery, is the best mode of developing the natural powers of a backward people.

In noble and rich families some training of the senses was obtained all through feudal times; because the men were brought up to war and the chase, and the women not only shared in some degree the sports of the men but acquired the manual skill which sewing, knitting, hand weaving, and embroidering demand.

The advent of mechanical power and machinery has greatly impaired the educational value of many trades, and this impairment has become so common that it may almost be called universal. The accurate joints a carpenter used to make by the careful use of his own eyes and hands are now made by machines almost without human intervention. The horseshoe which a blacksmith used to turn by hand on his anvil, and temper in his own little fire with a very accurate appreciation of the changing tints of the hot metal, is now turned out by machinery as one of a hundred thousand, almost without touch of human hand or glance of human eye. The ordinary uniformity of a machine product is due to invariability in the action of the machine; and this invariability is a main object from the point of view of the inventor or the proprietor. But that same invariability makes the tending of the machine of little use in the education of the human being that tends it—child, woman, or man.

The difference between a good workman and a poor one in agriculture, mining, or manufacturing is the difference between the man who possesses well-trained senses and good judgment in using them and the man who does not.

It follows from these considerations that the training of the senses should always have been a prime object in human education, at every stage from primary to professional. That prime object it has never been, and is not to-day. The kind of education the modern world has inherited from ancient times was based chiefly on literature. Its principal materials, beside some elementary mathematics, were sacred and profane writings, both prose and poetry, including descriptive narration, history, philosophy, and religion; but accompanying this tradition of language and literature was another highly useful transmission from ancient times—the study of the fine arts, with the many kinds of skill that are indispensable to artistic creation. Wherever in Europe the cultivation of the fine arts has survived in vigor, there the varied skill of the artist in music, painting, sculpture, and architecture has been a saving element in national education, although it affected strongly only a limited number of persons. The English nation was less influenced by artistic culture than the nations of the Continent. American secondary and higher education copied English models, and were also injuriously affected by the Puritan, Genevan, Scotch-*Presbyterian*, and Quaker disdain for the fine arts. As the result the programs of secondary schools in the United States allotted only an insignificant portion of school

time to the cultivation of the senses through music and drawing; and, until lately, boys and girls in secondary schools did not have their attention directed to the fine arts by any outside or voluntary organizations. As a rule, the young men admitted to American colleges can neither draw nor sing; and they possess no other skill of eye, ear, or hand.

Since the middle of the eighteenth century a new element in the education of the white race has been developing, slowly for 100 years, but rapidly during the past 50. This new element is physical, chemical, and biological science. Through the study of these subjects the medical profession has been revolutionized, and several new professions of high value have been created, such as that of the chemist, of the engineer—civil, mechanical, electrical, or metallurgical—and of the forester. Through the radical work of great inventors and discoverers and of these new professions, all the large industries and transportation methods of the world, and therefore the commerce of the world, have been so changed that the producers and traders of times preceding 1850 would find, if they should revisit the scenes of their labors, that the processes by which they made their livings had completely disappeared. This prodigious change should have instructed the makers of programs for schools and colleges maintained by nations which were undergoing this great revolution in regard to their means of livelihood; but for the most part professional educators have been, and still are, blind to the necessity of a corresponding reformation or revision of the processes of education.

There is one profession, however, in which the educational processes have been adequately changed, but only within recent years, namely, the profession of medicine. The reason for the comparatively early improvement of medical education is that the medical art has always depended, for such measure of success as it attained, on the physician's power of accurate observation and his faculty of reasoning cautiously and soundly on the testimony which his senses gave him. From remotest times the successful physician has been by nature a naturalist. He saw and heard straight, and his touch gave him trustworthy information. He has still, and must always have, the naturalist's temperament, and he must possess the naturalist's trained senses. The reason that medicine and surgery have within 25 years made such astonishing progress is that the practitioner, possessing the senses and mental habits of the naturalist, has been supplied through the progress of biological, chemical, and physical science with wonderful new means of accurate diagnosis. The training the medical student now receives is very largely individual training in the use of his senses; and this training is given by experts in the use of their own eyes, ears, and hands in diagnosis and treatment. The just reasoning follows on the trustworthy observation. What has already been done in medical education needs to be done in all other forms of education, whether for trades or for professions, whether for occupations chiefly manual or for those chiefly mental.

The great increase of urban population at the expense of rural which has taken place during the past 60 years, with the accompanying growth of factories and the crowding together of the working people and their families, has resulted, so far as schools and colleges are concerned, in placing more children and youths than formerly under the influence of systematic education and keeping them there for a longer period; but this improvement has been accompanied by a decline in the amount and quality of the sense training which children and adolescents have received. In cities and large towns the trade which a boy chooses, or is assigned to, no longer demands for admission a prolonged apprenticeship. Machinery turns out an ample product, without the need of much skilled labor. The general result is an inadequate training of the senses of the rising generation for accurate and quick observation.

In recent years, on account of the complexities, urgencies, and numerous accidents of urban life, there has been a striking revelation of the untrustworthiness of human testimony, not because witnesses intended to deceive, but because they were unable

to see, hear, or describe accurately what really happened in their presence. This inability to see, hear, and describe correctly is not at all confined to uneducated people. On the contrary, it is often found in men and women whose education has been prolonged and thorough, but never contained any significant element of sense training. Many highly educated American ministers, lawyers, and teachers have never received any scientific training, have never used any instrument of precision, possess no manual skill whatever, and can not draw, sing, or play on a musical instrument. Their entire education has dwelt in the region of language, literature, philosophy, and history, with a brief excursion into the field of mathematics. Many an elderly professional man, looking back on his education and examining his own habits of thought and of expression, perceives that his senses were never trained to act with precision; that his habits of thought permit vagueness, obscurity, and inaccuracy, and that his spoken or written statement lacks that measured, cautious, candid, simple quality which the scientific spirit fosters and inculcates.

A survey of the programs of the existing American secondary schools—public, private, and endowed—would show that, as a rule, they pay little attention to the training of the senses, and provide small opportunities for acquiring any skill of eye, ear, or hand, or any acquaintance with the accurate recording and cautious reasoning which modern science prescribes. The general result of such a survey would be that the secondary schools are giving not more than one-tenth to one-sixth of their force to observational, sense-training subjects. Any school superintendent, teacher, or committee man can verify the results of this analysis in any secondary schools with which he is acquainted.

The changes which ought to be made immediately in the programs of American secondary schools, in order to correct the glaring deficiencies of the present programs, are chiefly the introduction of more hand, ear, and eye work, such as drawing, carpentry, turning, music, sewing, and cooking; and the giving of much more time to the sciences of observation—chemistry, physics, biology, and geography, not political, but geological and ethnographical geography. These sciences should be taught in the most concrete manner possible—that is, in laboratories, with ample experimenting done by the individual pupil with his own eyes and hands, and in the field through the pupil's own observation guided by expert leaders. In secondary schools situated in the country the elements of agriculture should have an important place in the program, and the pupils should all work in the school gardens and experimental plots, both individually and in cooperation with others. In city schools a manual training should be given which should prepare a boy for any one of many different trades, not by familiarizing him with the details of actual work in any trade, but by giving him an all-round bodily vigor, a nervous system capable of multiform coordinated efforts, a liking for doing his best in competition with mates, and a widely applicable skill of eye and hand. Again, music should be given a substantial place in the program of every secondary school, in order that all the pupils may learn musical notation, and may get much practice in reading music and in singing. Drawing, both freehand and mechanical, should be given ample time in every secondary school program, because it is an admirable mode of expression which supplements language and is often to be preferred to it, lies at the foundation of excellence in many arts and trades, affords simultaneously good training for both eye and hand, and gives much enjoyment throughout life to the possessor of even a moderate amount of skill.

Drawing and music, like other fine-art studies, were regarded by the Puritan settlers of New England and by all their social and religious kindred as superfluities, which, if not positively evil, were still of wasteful or harmful tendency, and were, therefore, to be kept out of every course of education. By many teachers and educational administrators music and drawing are still regarded as fads or trivial accomplishments not worthy to rank as substantial educational material; whereas they are important features in the outfit of every human being who means to be cultivated, efficient, and

rationally happy. In consequence, many native Americans have grown up without musical faculty and without any power to draw or sketch, and so without the high capacity for enjoyment, and for giving joy, which even a moderate acquaintance with these arts imparts. This is a disaster which has much diminished the happiness of the native American stock. It is high time that the American school—urban or rural, mechanical, commercial, or classical, public, private, or endowed—set earnestly to work to repair this great loss and damage. Although considerable improvements have been recently made in the programs of American secondary schools, especially within the past 10 years, or since vocational training has been much discussed, multitudes of Americans continue to regard the sense-training subjects as fads and superfluities. They say, let the public elementary schools teach thoroughly reading, writing, spelling, and arithmetic, and let natural science, drawing, music, domestic arts and crafts, and manual training severely alone. Let the secondary schools teach thoroughly English, Latin, American history, and mathematics, with a dash of economics and civics, and cease to encumber their programs with bits of the new sciences and the new sociology. This doctrine is dangerously conservative; for it would restrict the rising generations to memory studies, and give them no real acquaintance with the sciences and arts which within a hundred years have revolutionized all the industries of the white race, modified profoundly all the political and ethical conceptions of the freedom-loving peoples, and added wonderfully to the productive capacity of Europe and America.

If anyone asks how it can be possible that these new subjects, all time-consuming, should be introduced into the existing secondary schools of the United States, the answer—adequate, though not easy to put into practice—is, first, that the memory subjects and the mathematics should be somewhat reduced as regards number of assigned periods in the week; secondly, that afternoon hours should be utilized, or, in other words, that the school day should be lengthened; and thirdly, that the long summer vacation should be reduced. It is worse than absurd to turn city children into the streets for more than two months every summer. Since the new subjects all require bodily as well as mental exertion, they can be added to the memory subjects without any risk to the health of the children; provided that the shops, laboratories, and exercising rooms be kept cool and well ventilated. In rural schools a good part of the new work in sowing, planting, cultivating the ground, and harvesting must be done out of doors. The observational, manual, and scientific subjects often prove capable of awaking in a boy or young man an intellectual interest and a zeal in work which memory studies have never stirred. Hand-and-eye work often develops a power of concentrated attention which bookwork had failed to produce, but which can be transferred to bookwork when once created. All the new subjects require vigorous and constant use of the memory, and give much practice in exact recording, and in drawing only the limited and legitimate inference from the recorded facts.

The suggested changes in American school programs will not make public-school life harder or more fatiguing for the pupils. On the contrary, observational study and concrete teaching are more interesting to both children and adults than memory study of any sort; and whenever the interest of pupils is aroused, it brings out more concentrated attention and harder work, but causes less fatigue. The obvious utility of mental labor directed to a practical end increases the interest the pupils take in their work, and stimulates them to effective effort. To use a good tool or machine and get the results it is competent to produce when in skilful hands, is vastly more interesting than reading or hearing about the uses of such a tool or machine. Whenever, by the use of observational and concrete methods, the pupils' power of attention and of concentrated effort is developed, that power of attention once acquired can be exercised in other subjects. This principle holds true not only of manual or bodily labor but also of games and sports, and of cooperation in rhythmical movements, like dancing. The power of concentrated attention won in carpentry, turning, forging, or

farm work is easily transferred to work in reading, writing, and ciphering, or at a later stage in history, literature, and civics; so that the reduction in the so-called academic studies made to allow the introduction of observational studies need not result in less attainment in the academic studies themselves.

For this great improvement in the conduct of American secondary schools a good deal of preparation has already been made. The new schools of mechanic arts, the trade schools, the various endowed institutes for giving a sound training in applied science, and such institutions as the Hampton Institute and Tuskegee Institute are showing how to learn by actual seeing, hearing, touching, and doing, instead of by reading and committing to memory. They have proved that the mental powers, as well as the bodily powers, are strongly developed by the kind of instruction they give; so that nobody need apprehend that reduced attention to memory subjects, with increased attention to the training of the senses, the muscles, and the nerves, will result in a smaller capacity for sound thinking and for the exercise of an animating good will.

It is not the secondary school alone which needs to be reformed; the elementary school needs to set a different standard of attainment, not lower or easier, but, rather, higher and harder; a standard in which the training of the senses shall be an important element.

If the elementary and secondary schools served well boys and girls from 6 to 18 years of age, the main reform would, in time, be accomplished. It is but a small percentage of the youth of the country that go to the colleges and the higher technical schools; and the parents of this small percentage are often able to provide their children with opportunities for securing, outside of their systematic education, a well coordinated use of all their senses and nerves, such as a violinist, organist, pilot, locomotive engineer, or sharpshooter requires. The educational publicist must keep in mind the interests of the 95 per cent of the children, rather than those of the 5 per cent; for it is on the wise treatment of the mass of the population during youth that a modern democracy must rely for assuring the public health, prosperity, and happiness.

If the educational material and the method of instruction were right, the training given in the grades would be just as good for the children who leave school at 14 as for those who go on till 18, and the training in the high school would be equally appropriate for pupils who do not go to college as for those who do. The progressive sense-training from beginning to end of systematic education is desirable for all pupils, whatever their destination in after life, and should prepare every pupil for his best entrance on earning a livelihood, at whatever age that necessity is to come upon him. It should be the same with the language and history studies in every public school program. At every stage, or in every grade, they should be suitable for every pupil, no matter what his destination. Flexibility and adaptation to individual needs would still be necessary in the programs, first, in order to enable the individual pupil to concentrate on the studies he prefers and excels in, and secondly to enable pupils of different capacity to advance at different rates.

The adoption of these principles would solve justly problems in the American tax-supported system of public education which have been in debate for generations.

It must not be imagined that any advocate of more sense training in education expects to diminish the exercise of the reasoning powers or of the motive powers which distinguish man from the other animals, or to impair man's faith in the spiritual unity of the world, or his sense of duty toward fellowmen, or his sympathies with them. The devotees of natural and physical science during the last 150 years have not shown themselves inferior to any other class of men in their power to reason and to will, and have shown themselves superior to any other class of men in the value or worth to society of the product of those powers. The men who have done most for the human race since the nineteenth century began, through the right use of their reason, imagination, and will, are the men of science, the artists, and the skilled

craftsmen, not the metaphysicians, the orators, the historians, or the rulers. In modern times the most beneficent of the rulers have been men who shared in some degree the new scientific spirit, and the same is true of the metaphysicians. As to the real poets, teachers of religion, and other men of genius, their best work has the scientific quality of precision and truthfulness; and their rhetorical or oratorical work is only their second best. The best poetry of the last three centuries perfectly illustrates this general truth. Shakespeare wrote: "I know a bank whereon the wild thyme grows." The florists now tell us that thyme will not thrive except on a bank.

George Herbert wrote:

Sweet day, so cool, so calm, so bright;
The bridal of the earth and sky,
The dew shall weep thy fall to-night,
For thou must die.

Precision of statement could not go farther; thought and word are perfectly accurate. Emerson said to the rhodora: "The selfsame power that brought me here, brought you." A more accurate description of the universal Providence could not be given. Even martial poetry often possesses the same absolute accuracy:

Oh! Tiber, Father Tiber,
To whom the Romans pray,
A Roman's life, a Roman's arms,
Take thou in charge this day!

Cannon to right of them,
Cannon to left of them,
Volleyed and thundered,
Into the jaws of Death
Rode the six hundred.

When human emotions are to be stirred, and human wills inspired, it is the accurate, perfectly true statement which moves most and lasts longest: "Greater love hath no man than this: that a man lay down his life for his friends."

The most exact, complete, satisfying, and influential description of true neighborliness in all literature is the parable of the Good Samaritan: "Which of these three, thinkest thou, proved neighbor unto him that fell among the robbers? And he said, He that showed mercy on him. And Jesus said unto him, Go and do thou likewise."

It is an important lesson to be drawn from the great war that under the passionate excitements and tremendous strains of the widespread disaster the medical profession and the nurses of all countries are holding firmly to that exact definition of the neighbor, and are obeying strictly the command, "Do thou likewise." These are men and women who have received thorough training of the senses without suffering any loss of quick sympathy or of humane devotion.

Rhetorical exaggeration, paradox, hyperbole, and rhapsody doubtless have their uses in moving to immediate action masses of ordinary men and women; but they are not the finest weapons of the teacher and moralist:

Speaks for itself the fact,
As unrelenting Nature leaves
Her every act!

Adjournment.

JOINT SESSION OF SECTION IV AND SECTION IX.

PAN AMERICAN UNION,
Tuesday afternoon, December 28, 1915.

Honorary Chairman, ANTONIO RAMÍREZ FONTECHA.

Chairman, P. P. CLAXTON.

The session was called to order at 2.30 o'clock by the chairman, who introduced the honorary chairman, Dr. Antonio Ramírez Fontecha, the ex-commissioner general of Honduras for the International Panama-Pacific Exposition. Dr. Fontecha expressed his appreciation of the honor of presiding at this session. He begged further to extend to the congress the cordial wishes of one of the small countries of the American Continent, but not the least in ideals.

The following program was arranged for this session by the sub-sectional committees on commerce and commercial education:

INTRODUCTORY REMARKS.

Hon. William C. Redfield.

Hon. Andrew J. Peters.

Dr. Edmund J. James.

GENERAL TOPIC: PREPARATION FOR TRADE, DOMESTIC AND FOREIGN.

From the standpoint of the business man,¹ by J. A. Farrell.

From the standpoint of the educator, by Edwin F. Gay.

INTRODUCTORY REMARKS.

By Hon. WILLIAM C. REDFIELD,

Secretary of Commerce.

Mr. Chairman, Ladies and Gentlemen: I am a little overwhelmed at having it said that the first address of the afternoon is to be by me, for I have nothing about me so suspicious as an address. In the hours that pass away so unsuspectingly in the Department of Commerce it had not occurred to me it was possible for you to expect a formal address when there are others so much better fitted by training and disposition to address you than I. And yet I should be false to much of my deepest feeling if I did not come at least to say a word or two of appreciation about the fact that a scientific body allows a

¹ Presented before the Conference on Foreign Service Training, Friday, Dec. 31.

Secretary of Commerce to come near it at all. It has until recent years been one of the characteristic features of commerce in this country that it should often give a cold shoulder to science of every kind. I feel that you are heaping coals of fire upon my head and upon the Department I represent in extending an invitation on behalf of scientists to a mere man of commerce to come into your sacred presence.

Now, there is more truth than I wish there was in what I have just said to you. It is a sad fact that in business in many lands science and commerce have been greatly separated. It is not a mere expression. They have looked at each other askance, and not in this country alone. There have been and there still are men in America who speak of the "practical" things as distinguished from the scientific things. This antagonism between the so-called practical and the scientific method has been deeply hurtful to American commerce; has resulted too much in the reign, now rapidly passing, of what we may call the "rule of thumb." King Thumb has been a great power in American industry, and King Science has looked in through closed windows too often to see King Thumb hard at work. But that day, thanks to the patience and power of science, has in large part passed, and will ere long disappear entirely. Now, I find in a newspaper published this week an article that will strike you, I am sure, strangely, for the title of it reads, "Adapting science to commerce." As if science after all was to come to be a servant and handmaiden of this thing we call commerce. I hope there still may be a larger development of this thought, and that we shall come to recognize the beginnings at least, of a science of commerce, and that we shall consider commerce itself as a matter requiring in very truth a scientific training.

There is a modest fitness, after all, in my being here, since we represent in the Department of Commerce four or five great scientific services of the Government. I have been glad to cause to have printed and circulated here a little pamphlet giving you in brief the names and addresses of these different scientific services and a summary of the work they do. Being myself a commercial man, brought up in a factory, I want to bear witness as such to my profound respect for and my belief in the great scientific work for development of industry. One of the things of which I am really most proud is that we have been able to keep these scientific services divorced from everything except scientific considerations in every manner. Now, we would welcome the scientific friends here to any one of these scientific services, where we would be glad to show you what is being done, and the method of doing; to put before you something of the height and depth of this scientific development.

We sometimes say that the Department of Commerce has for its jurisdiction the heavens above, the earth beneath, and the waters between. This is literally true, because it is our duty to map the bottom of the sea; to look after the health, number, and quality of the fish that are in our waters and the methods of catching them; to protect and map our coast line; to, in a large part, survey and measure the extent of the land; and to care for the wireless system, which has its work entirely in the atmosphere. So, you see, we do reach from the heavens above to the waters beneath the earth.

We are expecting to show, in connection with an address which the Superintendent of the Coast and Geodetic Survey will give next week in the Raleigh Hotel before one of your sections, moving pictures of how some of our scientific work is carried on.

How do we make the sciences, with which we have to deal, the servants of commerce? If I were one of you gentlemen who have papers to read, and knew how long the Secretary of Commerce is apt to talk when he gets on that subject, I should fold my paper, like the Arab his tent, and quietly steal away. Yet I purpose to be merciful to you, and only touch very briefly on a little of what the scientific work of the Government is, so far as we have to do with it.

First, as to how it affects the commerce of the country. To my thinking, gentlemen, we shall never reach what the commerce of America ought to be; it will never be the friend to our country and other countries that it is possible for it to be; it will never spread its influence abroad as it ought to do, until we find the United States aiding her commerce with the light that science can shed upon it. We need in our industries—we do not yet realize that we need it as much as we do—the constant aid of scientific men. We are as yet bunglers in much of our commercial work. We are attempting to do a great deal of commercial work all over the land with untrained and untaught instruments. We have not yet developed a class of trained commercial men. If you knew the difficulty we have to get men fitted to go into the lands at the south; fitted to go into the presence as their equals in mind and training of the great merchants and bankers and business men of the South and Central American countries, you would realize this more fully. The simple question, What modern languages does this gentleman speak? mows down like a scythe the great mass of applicants for commercial work. In what particular branch of commerce is the gentleman trained, acts also like a sickle. Those we are able to get are pitifully few as compared with the needs that exist for trained men, speaking the living languages of the world, and knowing something at least of what commerce means in all its broad significance.

The modern conquistador of commerce leaves no ruins in his path. He is a builder up of things. He is not a man who tramples with the iron heel of war, but he is a true constructor. He

draws nations together, and just as the conquistador of old had to be trained for his fierce and cruel war, so the conquistador of to-day needs to be trained for his work of useful living, of helpful service. We know perfectly well that to send a man out into the great commercial arenas of this world untaught and untrained, with what we are pleased sometimes to call a general education, is to send him to defeat, and to submit the nation to harm because the man is not equipped for the task he is sent to do. That is a branch of commercial education which has its manifold phases. I could not as much as touch upon them all here to-day, but I may lift a corner of the veil which shows how true it is that the scientific man of this hour is the servant and supporter of commerce and how upon his work commerce is building.

If it were not for applied biology there would be no pearl-button industry in America. I presume there are a great many pearl buttons in this audience. You pay a few cents for them, take them and use them without a thought that it requires constant active work of biological scientists to provide so simple a matter as a pearl button. Yet if we did not have applied biology your pearl buttons would be very high priced, because the supply now comes from the rivers of the Mississippi Valley, and was long ago threatened to be exhausted. How was the supply to be replenished? Some one, somewhere, had to find where the fresh-water clam came from, for it is this clam shell that provides the raw material from which the pearl button is obtained. Whence came the fresh-water clam? He was discovered at last hiding away in the larva stage in the gills of a fish. From that discovery has come much for our great Mississippi River industry. The Mississippi has a habit of overflowing its banks every spring. This causes the river, when reaching its normal limits again, to leave on the banks small ponds, which very soon dry up. These ponds contain many fish which their drying would destroy. Our men go many miles up and down this stream, taking these fish from the small, disappearing ponds and carrying them to the large biological laboratory or other temporary stations in the vicinity where they are inoculated with the germs which eventually become fresh-water clams. These little germs which are kept in tanks fasten themselves on the gills of the fish in the tank and stay there. These fish are then put back in the river and so distribute the germs all over the Mississippi Valley. When the germs are five or six or seven weeks old, they mature and drop off in the bottom of the river, where they remain till in due time the pearl fisher makes his catch, and the shells are made into pearl buttons. Were it not for the continued inoculation of millions of fish (8,000,000 last year, I believe) by this process, I doubt whether you would be able to get pearl buttons readily.

We discovered in another one of our scientific services another Washington Monument not long ago—one bigger, comparatively speaking, than the one we can see here in Washington. This particular Washington Monument of ours is under the sea where it comes up at certain stages of the tide to within 17 feet of the top. It is a dangerous thing for a Washington Monument as large as that to be under the sea. It sticks up like a spire about 50 feet in diameter and about 650 feet high. We have had the habit in past years of finding these things by wrecking a ship on them and then naming them after the ship. It now and then caused the loss of a good many lives, but we didn't seem to mind it. We have changed all that. Now we go about hunting these submerged monuments before the wreck. The Superintendent of the Coast Survey will talk about this and show you a picture of the work.

I should like to talk to you about the researches in the Bureau of Standards, where they go into the great facts which underlie our industries. There we keep something like 400 young scientific men working all the time. Did it ever strike you that there is no such thing as a standard of color? That your views and your fellow man's views as to what is red, yellow, or green may be different? There is no such thing as a standard red. Did you ever realize that there are great industries depending upon accurate colors? As there is no standard by which these things can be positively determined, I doubt if there is any one in this room who could say with accuracy what is red, green, blue, or yellow. If I asked you to bring me red I am sure 20 different shades, if not 200, would be brought. These things have to be known. There are industries depending upon a definite known standard of color, just as much as oleomargarine, butter, cottonseed oil, etc. We are working at the department to determine what standards of color are.

Now, without wearying you, it is our duty to go into many facts which are a little beyond the ordinary things of living, and bring them out, and see if we can determine the lines by which nature operates and make them useful to mankind.

In all this we are simply the servants of commerce, and it rejoices us more and more day by day to see recognition of this service coming from men who are the great producers of the commercial world. We believe that the veil is lifting, and the scientific man is finding his place, and that we shall add to the science of commerce, as it should be done, men trained in science in all its bearings, backing up commerce by scientific truths, and supporting commerce in its final phases.

So we in the Department of Commerce look most gratefully to this body of scientific men met here to consider those things which make for the larger lights of life as our fellow workers, and as those

whom we would willingly serve. More and more it seems to me true that many conditions of our lives are usually misunderstood. We do not know, and therefore disagree where, if we knew more fully, we would see a common ground for our work. The lighting by knowledge, the drawing of the veil from the secrets of nature, the opening up of truth in all its multiform phases brings the balm of peace to mankind. Additions to human thought bring in greater measure the power of service to us all. So I pray that the growth of scientific thought may go on; that it may be received sympathetically by public men; and that we of the commercial world may long continue to be its servants.

OUR GOVERNMENT'S ATTITUDE WITH RESPECT TO PREPARATION FOR FOREIGN SERVICE.

By ANDREW J. PETERS,

Assistant Secretary of the Treasury, Washington, D. C.

The present is indeed an opportune time for the enlargement of mutual trade and financial interests of the Americas. The benefits which resulted from the Pan American financial conference of May last have in great measure paved the way. Heretofore merchants of this country purchasing consignments from our sister Republics had to pay for them by drafts on London, while now the American dollar is practically the only one not at a discount, and plans are already under way by prominent financiers of this country to furnish the money which is no longer available from Europe and so badly needed in South and Central America for the development of their enterprises.

Now, then, is the time to cement that friendship which has always existed between this country and the southern Republics in a material way by stepping into the breach caused by the withdrawal of European capital from South America and laying foundations for a continuance of our present participation in the South American trade when the European war has ended, for this is the only way we shall keep it. This is probably the first real opportunity this country has ever had of enjoying its just share of the trade with its sister Republics, for until the outbreak of the European war we have been unable to compete with our European rivals, owing to the shortage of American steamship lines and the further fact that rebates and preferential rates were granted by European countries which resulted in monopolizing for them this vast trade, notwithstanding the fact that this country has taken the greater part of South American exports.

The question of adequate shipping facilities is the paramount one which concerns our trade and further relationship with the Latin-American Republics. This matter is now receiving the attention of Congress and it is to be hoped that a broad fundamental law will be enacted at the present session which will result in the creation of an adequate merchant marine for the conduct of our South American and foreign trade and which will put an end to foreign monopoly of the seas in this regard.

This country is now passing through one of the most prosperous eras in its history. Our domestic and foreign trade has expanded to enormous proportions. Unemployment is not a problem to-day and the country has been blessed again with huge crops. This great revival in business is legitimate and would have been experienced even though the European war had never occurred. When the war is over, however, there is bound to be a decrease in the output of some commodities which are now swelling our exports, but if we are successful in procuring adequate shipping facilities with which to transport our surplus goods to the Latin-American Republics, as well as to other foreign countries, we will, I am confident, be "prepared for peace" as far as our future foreign commerce is concerned.

We must not be overconfident, however, in our ability to retain our present participation in the Latin-American trade. It is absolutely necessary that our interest in the welfare of our neighbors be genuine and altruistic. We should therefore be prepared to extend to them every facility that our resources will permit, study, and adapt ourselves to, their trade customs and render them better service than they were accustomed in the past to receive from Europe.

We realize the necessity for a better mutual understanding between the nations of the two hemispheres, and efforts to establish that condition are meeting with success. Our desire for a resultant increased trade relation is not a selfish one, and can never expand or survive if based solely on selfish aims. Its true basis can rest only on a mutual understanding of the peoples of the respective countries and the mutual benefit and help which is derived from such understanding. Commerce can not be advanced by the attempted exploitation of one country by another, or by one country seeking solely to sell goods to another. It must exist by trade that is to the mutual advantage of all countries concerned. There must be a mutual exchange, and for that reason the calling and meeting of such a conference as this is of immense advantage to all nations concerned.

TRAINING FOR FOREIGN TRADE.

Since the outbreak of the European war, interest in foreign trade in the United States has been something entirely unparalleled in our previous experience. During the last half century, when our

foreign trade has been growing steadily from year to year, we have not had the same attitude toward foreign trade which the people in the principal nations of Europe have had. In the first place, we have not possessed a merchant marine. Thus our foreign trade has been physically in the hands of the people of other commercial nations. We have exported chiefly raw materials and agricultural products which practically sold themselves, and consequently did not have to go out and study foreign markets and possible foreign outlets for our principal export products. Instead, the representatives of foreign merchandising concerns and the foreign merchants came to us and took off our hands what we had to supply, and there was the end of the transaction. All the merchandising problems, with a few notable exceptions, were solved for us by the mere force of economic conditions. We were anxious to sell only to the same extent that foreign buyers were anxious to buy.

The result of it all has been that foreign trade has not offered a career to a large number of Americans in the same way that foreign trade has offered a career to a large number of Englishmen, a large number of Dutchmen, Germans, and Frenchmen. The peoples of those nationalities have for years been marketing manufactured products, and manufactured products which required the cultivation of sales of ability and vigorous penetration into foreign markets. Those countries have been developing their merchant marines and have been actually handling their own export commodities up to the time when they reached the consumers in foreign lands. Foreign commerce in those countries has consequently for years offered a career. In England young men starting in business have been confronted with specific opportunities to go to the colonies and to go to foreign countries representing English industrial concerns. In France the development has been along the same lines, though on a smaller scale. It is interesting to pick up a copy of the French official publication, *Moniteur du Commerce*, and note the advertisements of opportunities for young Frenchmen to represent French manufacturers in the colonies and in foreign countries. In the same column are likewise numerous advertisements of young Frenchmen who have prepared themselves for service in the foreign and colonial fields, who are looking for appointments. In our country we have thought of "the learned professions," the Army and Navy, and possibly some other branches of Government service under the conception of a career. Certainly the ordinary employee beginning with a commercial concern has had no such lofty idea as that of a career ahead of him. He has a job, no very definite aims or ambitions; if another line of employment offered a better job, he would take it, no matter how far removed it might be from the line he was in before, if he thought he could hold down the new job, liked the firm,

etc. In the great commercial nations of Europe the situation has been different.

Perhaps in Germany, even more than in England, France, and the other countries, commerce has been looked on as a career, just as the Army and Navy or one of "the learned professions." The result is that in Germany there is and has been for some time a larger, better trained, more specialized supply of available men and women for the different posts in the commerce organization. With us how many export sales managers began their business life with the ambition or the definite aim to fit themselves to become export sales managers? Is it not true that the most of them went into business life with the idea of taking their chances on learning the general business of the firms they were with, and taking their chances on promotions in the service in whatever direction the openings might arise? They have worked up, and by ability shown in other lines in the business of their firms they earned promotions to positions of more and more responsibility, and then when the position of export sales manager became open, have been shunted in there on the firm's confidence from their success in other lines that they would make good in that. Our leading men in foreign-trade work have been recruited to a surprisingly large degree from other lines. They are men who have jumped in and have had to learn the things which they should know after they have arrived in their present positions. This is a more or less haphazard method of filling these positions, and the men selected have in too many instances had only a haphazard training.

We have had Germany cited to us as the great example so often that we are apt to become wearied of repetitions along this line. But even so, we must acknowledge that Germany is indisputably ahead of us in the whole matter of vocational training, and though the development of the fine network of schools of commerce in that country is recent, the system has brought and is bringing such good results that the appropriations for the extension of this kind of instruction have not been begrudged. It is in these schools that the Germans get the training which fits them for commerce as a career; those who select foreign commerce, world commerce, receive the proper training for their chosen work.

Before 1880 the commercial schools (*Handelsschulen*) were almost unknown even in their elementary forms, and it is only since 1890 that their development has been really notable. The commercial schools were at first looked upon as superfluous or as specializing too early or too highly. Gradually, however, the various governments, the trade organizations, the chambers of commerce, came to realize the importance of this class of instruction, and to-day in Germany the higher institutions of learning, devoting special attention to the training of men to meet the vast problems of world trade, are better established

and better equipped than those of any other country. The trade schools teach the artisan how to apply science and skill in the handicraft employments, and the commercial schools educate the merchant, the wholesaler, the world dealer, the great banker, the consular officer; in short, the men who stand at the head of the commerce of the Empire. It is felt that both systems of education are necessary for the successful development of the manufacturing industry and the marketing of commodities, upon which, in truth, the success of the manufacturing industry so largely depends.

The highest step in the general system of commercial education in Germany is occupied by the so-called commercial high schools (*Handelsschulen*), where instruction is on a par with instruction in the liberal arts in the universities. Those schools rank with the famous technical high schools, agricultural high schools, and the universities. In some instances they are independent organizations and in others they are a part of long established universities. A few years ago United States Deputy Consul Meyer made an interesting report on the development of these schools and on the attitude toward them in Germany. This report was published by the Department of Commerce as Special Consular Reports, volume 33. Mr. Meyer has pointed out that in Germany education invests a man with a peculiar social prestige, irrespective of his personality. The social standing of the mercantile classes has been elevated by a higher education in the schools of the type of the commercial high schools. Instruction in these schools is given not only by the regular professors but is in a very large measure given by practical men of affairs. The effort has constantly been made to safeguard the instruction from becoming too academic and including too practical aspects; that is, to keep the instruction from becoming of a typical professional sort. In one or another of the schools practically all the languages of the civilized world are taught, not only the ordinary commercial languages which are a subject of instruction in our universities, but even the most outlandish tongues, such as the Bantu and other Negro dialects, which prevail in some sections of Africa where the Germans have been seeking foreign trade.

In our Government service we have recently expanded our foreign trade work in consequence of the ever-increasing demand for such work on the part of American manufacturers. I have been informed that the Department of Commerce and the Department of State have experienced difficulty, particularly in getting men with the proper education and training to do this class of work. In language training most candidates have been decidedly deficient. The Bureau of Foreign and Domestic Commerce of the Department of Commerce has been conducting examinations practically every month during the year 1915. Candidates have reported that they have studied French, German, or Spanish for so and so many years in our universities,

and when the tests have come it has been shown that they are woefully deficient in practical knowledge of the languages. Their training in commercial geography and in any matters relating to the technique of the export trade has been equally deficient.

The National City Bank in New York has experienced precisely the same sort of difficulty, and that institution has now established a foreign trade training school of its own, in which it is giving fundamental instruction in foreign languages and in matters of foreign trade and foreign banking with the emphasis all on the practical side of the work. For this service they have been picking recent graduates of our leading universities who have had an interest in work of this kind. The material has often been pretty crude at the start, and the really practical matters have come as a revelation to most of these young men, even after they have taken courses in our educational institutions which were drawn up and conducted with the idea of preparing them for foreign trade work.

Perhaps the most discouraging feature in this problem is that the leaders in our schools and colleges seem unable or unwilling to see the need, or, having seen it, are unable or unwilling to give the thorough instruction necessary. If ever the educator had a definite, concrete problem to solve, it is this. Up to the present time there are no appreciable results. Several of the commercial schools and colleges are giving excellent instruction to young men intending to engage in business in this country, and some are offering good courses in foreign trade. But these courses have not been grouped so as to give the all-round training necessary for success in export trade; the language work is inadequate, and no opportunity is provided to acquire the requisite practical experience.

At one institution a novel step has been taken and a promising plan is ready to be put into operation. New York University has announced the creation of a limited number of special business fellowships for the purpose of training men for foreign trade. These fellowships are awarded by business concerns to men selected from a large number of applicants throughout the country. The plan is to employ the men on a part-time arrangement in the New York offices of these concerns and let them spend the remainder of their time in study at the New York University. During the summers, which would ordinarily be devoted to vacation, the men will be expected to devote their entire time to the work of the business concerns employing them. For this half-time work they are to receive from \$60 to \$75 per month, and the course of training will usually last three years, though each man must of course adapt his training to the need of his employers. It is also expected that the men will live in clubs located near the university, each club devoted to the study of one foreign language. During the coming year there

probably will be 25 to 30 men studying and working on this basis, and a rapid increase in the number is expected in the future.

It will be seen, therefore, that when compared with the thorough and careful training which Germany and other European countries have given their foreign representatives, our efforts in this direction have been lamentably weak. Our previous attitude toward foreign trade expansion has, however, been largely, if not directly responsible for this. But I am strongly of the belief that with the stimulus recently given our export trade, and the natural incentive to hold the advantage which we now have in the world's trade, will result in a general awakening of our exporters to the great possibilities that are within their reach and that they will profit by the example set by our more experienced trade competitors in Europe by making an intelligent study of foreign markets and adapting themselves to the trade customs of such markets.

This gathering of distinguished representatives from the Americas affords an excellent opportunity for valuable interchange of thought along this line, and I am confident the benefits to be derived will be far-reaching and enduring.

ADDRESS

By EDMUND J. JAMES,

President of the University of Illinois.

Thirty-two years ago this autumn I joined the faculty of the Wharton School of Finance and Economy of the University of Pennsylvania. This school was an integral part of the college department of that great university. So far as I know it represented in its origin and development the first real attempt either in Europe or America to develop a center of higher learning in intimate connection with the other important faculties of our historic universities, to provide a curriculum of university grade and university character for the future business man.

Many of the subjects which entered into the curriculum of this school had, of course, been for a long time objects of cultivation in university centers both in Europe and America. Economics in the widest sense of the term, politics, and history, had been of course important subjects of study in university centers since the development of these sciences. More practical subjects like bookkeeping and accounting, and commercial geography had been utilized as instruments of training in the secondary schools and in special technical preparatory schools in all countries. A course in commercial education had been organized and conducted for a brief period in the University of Illinois in the latter part of the seventies, but it did not succeed

according to the ideas of the men responsible for the conduct of the institution, and was soon dropped.

The great commercial schools in Europe, such as those at Antwerp, Leipzig, Vienna, Paris, etc., had no intimate connection, and, generally speaking, no connection at all, with the universities or university life of their respective countries. In fact, it was felt that there was nothing in the business career, nothing in the subjects with which a business man concerned himself, which offered any good ground for including the study of these subjects in the university curriculum or locating their cultivation at the university centers. In this sense, therefore, the Wharton School of Finance and Economy represented a real departure. Its organization, development, and great success marked an epoch in the development of this important side of higher learning.

I joined the faculty of the Wharton School of Finance and Economy in the autumn of 1883, was subsequently made director, and for 13 years devoted my best energies to the elaboration and application of a program of study which should be adapted for the purpose in view—a purpose which may be briefly summed up as that of making the university as much a center of interest and value to the student who is looking forward to the practical work of business in all its various ramifications as it had been in the past to the physician, the lawyer, the theologian, the scientist.

The idea being new, as I suggested before, met all sorts of obstacles. It was urged that there was nothing in the literature of business life or business practice which compared for an instant in logic or in value to the literature of medicine, of law, of theology, of chemistry, of physics, of philology, etc. It was asserted that the future business man must get his training and his experience at the actual work of business in an office, serving as a cadet to successful men. In other words, all the ordinary arguments which in this country, at any rate, had been made to do service against the development of any kind of a technical course for a professional career—that is, against the development of the university in the proper sense of the term—were brought in here and emphasized doubly. Some of us who are not yet very old can still remember the time when in this country a physician was very likely to advise a youngster that it was unnecessary to go to a medical school for more than a brief term of three or six months; that the best way to prepare himself for the practice of medicine was by entering a doctor's office, washing his bottles, helping him to make up his prescriptions, traveling with him on his rounds, so as to get the benefit of immediate bedside instruction, etc. The same argument was applied in the case of the lawyer and the youngster was advised not to go to a law school, but to spend his time in a lawyer's office, copying instruments, looking up cases,

carrying the bag for the lawyer into the court room, listening to the argument of the counsel and the charge of the judges, etc.

All that sounds now very much like ancient history—so ancient, indeed, that it has no relation to the work which we are doing in our great universities in the United States. But it is only recently, for instance, that the public has come around to the view that the engineer can find in a properly organized engineering school a better training for certain portions of his preparation than he can get in any other way; and the victory of the engineering school over the haphazard training of the office and the job has only been a very recent one. It has, however, been all the more complete, and engineering is now recognized to be as important, as dignified, as worthy a subject of university instruction as medicine or law or theology or any of the important independent sciences, like chemistry and physics, and as well worth the while of a student to spend time and money in acquiring.

The victory has not yet been fully achieved in the field of commercial education, but it is just as inevitable as in the fields already mentioned. It is just as certain to come to pass in the next generation that business men will look to the universities to an increasing extent as centers where they, too, if they are wise, must spend a longer or a shorter time in getting a kind of preparation for their work which the office and the counting house can not so well give.

In this work the Wharton School of Finance and Economy, as I said above, has been a pioneer, and has influenced the policy, not merely of this country, but of foreign countries as well. I think it is not too much to say that the establishment of the commercial courses at Manchester and the other provincial English universities, the affiliation of the great schools of commerce in Berlin and Leipzig and Munich with the universities can be traced pretty directly toward the movement inaugurated and ever since pursued by this original university school of business, while it has led numerous American universities to follow the example of the University of Pennsylvania.

It is difficult to define a university in such a way as to have the definition apply with exactness to all the institutions of different countries which may fairly be put in the class described by the term. I shall not attempt, therefore, any definition of the university, but I should say that university work and training, however it may be organized, is characterized by two or three things, and that whenever work or training is characterized by those things it may properly be called university work.

The first characteristic of university work is that it is carried on by students of a considerable degree of maturity and with a comprehensive liberal preparatory training. Work which is done by boys of 12 or 15, no matter what you call it, is not university work. Work

carried on by boys who have had little or no preliminary intellectual training, even if they are 16 or 17 or 18 or 20, is not university work. To my mind this quality of preliminary preparation of a liberal kind in the students themselves and a considerable degree of mental maturity is a necessary characteristic of what I should call university training.

A second characteristic of university training is that it is directed toward some definite end with the idea of preparing a man to handle some definite concrete problem or series of problems such as are associated with some distinct calling like that of a physician or a lawyer or an engineer or farmer or teacher.

A third characteristic of university work and training is that it has to do primarily with introducing the students who are pursuing it to the sciences which underlie the successful pursuit of a learned calling or profession. The university law training is concerned about introducing students to the fundamental sciences which make up the great subject of law; and in medicine the university training of a physician is chiefly concerned with introducing and thoroughly grounding the student in those sciences—so-called laboratory and so-called clinical sciences—which are fundamental to the practice of this profession. And if a man is given a university training in even a simple and self-dependent subject, like mathematics, for instance, the effort is not primarily directed toward teaching the student everything that has been found out in the field of mathematics up to the present time, but rather in giving him such a grounding in the fundamental features of the science of mathematics that he will be able subsequently himself to go on ever increasing his knowledge, ever applying it more effectively, and ever utilizing it more thoroughly for the purposes for which this training is acquired.

If the university, therefore, is to become a center of training for the future business man, it must have a set of sciences by the introduction to and the acquisition of which it can give this fundamental training which shall prepare a man for the largest success in a business way. In other words, there must be certain sciences which form a content of this training. There must be a literature of the sciences of business corresponding to medical literature and legal literature and theological literature and engineering literature.

This was to a considerable extent the greatest obstacle which we had to overcome in the initiating work of the Wharton School of Finance and Economy. There was little or no valuable literature accessible to the student bearing on the subjects which he might wish to pursue as a part of his training for business. Speaking in a large way, there was no book in English in the year 1883 on the subject of railroading, aside from the engineering and stock organization, which was worth reading. There was no valuable literature on insurance.

There was no book on finance in the modern sense of that term. There had been many works on economics, in the ordinary sense of that term, like Adam Smith's, Mill's, etc., but these were simply the foundation of these practical economic subjects. They were simply an introduction and had about the same relation to all these technical subjects which we have since elaborated that elementary chemistry or biology have to a medical course. The work in accounting, which presents some most valuable and interesting scientific aspects, was not in a teachable shape so that it could be used for effective practical or theoretical training of university scope. In other words, one might say that 30 years ago, before any effective work could be done at all satisfactory to those of us who believed in this enterprise, it was necessary to create a literature, a technical literature, a literature based on the elaboration of scientific principles and shot through with the elements of sanity, growing out of practical touch and experience with actual business conditions.

One reason why the movement has received such a great impetus in the second 15 years as compared with what was possible in the first 15 years of this development is to be found in the fact that we are finally developing a literature worth studying and worth adding to by the best brains of the community.

I expect to see what I prophesied 30 years ago I should see if I lived out my three score years and ten—the university in the United States of America a center for the scientific study of business and for valuable scientific contributions to our knowledge of business. I expect to see our practical people turning more and more toward the university as the place from which thoughtful logical analysis and criticism of business methods and business practices shall proceed. In other words, I expect to see our American public expecting from the professor of business in the universities some of the most valuable contributions to our understanding of business phenomena and to our grasp of business conditions.

I expect to see, further, even in the short time which is to elapse between now and the time when I shall have reached three score years and ten, if I am so fortunate as to do so, the business world coming to an ever greater realization of the fact that they can find in the young men who have had this business training of the university most valuable assistants—men who can do in five years or ten years what untrained men can not do in a generation, and many times can not do at all. If this comes about, the young man who is looking forward to a business career, who is expecting to become a banker or a railroad officer or an insurance officer or the head of a merchandising firm will think as little of going into any one of these businesses without a preparatory university training as the youngster thinks

to-day of following a medical career without going to a medical school or a legal career without attending a law school or an engineering career without completing the course of an engineering school.

The result of this, in my opinion, will be a much better trained set of business men, a reduction in the losses incident to carrying on business, an increase in the efficiency of men who are in control of business, and an understanding and appreciation on the part of the great mass of the community of the essentially learned quality, if you wish to use that term, of a successful body of business men.

Aside from the improvement in business in the technical sense of the term, there will accrue a great social advantage from centering in the universities—the higher education of business men, which, to my mind, will turn out to be one of the most important advantages of bringing about this consummation. When in one great institution we bring together the young men who are studying medicine and law and engineering and agriculture and business—i. e., the men who, in a peculiar way, help to increase those forces in the community which are making for harmony, for intelligence, and for cooperation—the members of each profession will become acquainted with the members of other professions and will derive great advantage from this mere acquaintanceship. They will realize that they are all following the same high aim of serving humanity through the development and application of science.

In this way each of the great callings which demand a scientific and liberal training will become a learned profession, with all that which means for increased efficiency, for wider outlook, for broader views, for the more rapid advance of civilization.

PREPARATION FOR TRADE, DOMESTIC AND FOREIGN.

By EDWIN F. GAY,

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It has been evident for some time that our educational organization has not kept pace with our industrial organization. The surrender or abandonment of its educational function by industry and trade was apparent with the advent of the industrial revolution, and has become more obvious with the progress of this economic transformation from country to country, from industry to industry, and from industry to commerce. Meantime the educational system, with its conservative ideas and traditional methods, has only commenced to adjust itself to the radically changed conditions of the economic and social environment.

The older social organization of our European background had evolved an educational equipment fairly sufficient for its needs. It was a society predominantly agricultural, with industry and trade limited to small individual units operating in local or restricted markets, and with a small governing class assisted by a group professionally trained for the church, the law courts, and the public administration. Its agricultural workers were largely illiterate, but the traditional lore of husbandry and house-

wifery was passed on securely from generation to generation. The hard labor of the fields and the home, together with the proverbs and tales of the fireside, long furnished the schooling of the masses. Even the educational institutions of the time were adjusted to the economic requirements of the agricultural community. Our long summer school vacation, now an absurd anachronism, is the survival from what, to use a modern term, we may call a part-time system. The young recruits for the handicraft shop and the trader's countinghouse were trained by a system of long-term apprenticeship which, under the eye of the master in shop and home, gave the necessary but not highly specialized proficiency and returned in labor a fair compensation for the time and trouble of instruction. For this group and for a small part of the agricultural class the rudiments of reading, writing, and arithmetic came gradually to be provided by supplementary teaching. The dame school was typical for its period. The higher schools for the few of the upper classes, following medieval and humanistic models, were not merely engaged in preserving the thin classical tradition as a veneer of culture to the leisure class, but gave the essential foundation for a professional career. Latin, for instance, was a necessary tool for the churchman, the lawyer, the administrator, and diplomat. The education of the university was vocational. The whole educational system, crude and imperfect though it was, was firmly rooted in a relatively stable social organization and was adapted to its simple needs. From its long persistence it developed on its formal school side a traditional authority and prestige which, upheld zealously by its university leadership, has been maintained, with perhaps some impairment, through a century of defective readjustment.

Compared with the slow-moving industrial changes of earlier periods, the modern factory system, with its sudden and eruptive force and its enormous social reactions, may justly be called revolutionary. It has undermined and is still undermining the practical education for the working life which was given under the older order, and it is now making great demands upon the school, formerly only a subordinate adjunct, which the school has been unprepared to meet. The extreme subdivision of labor which characterizes modern business organization has inevitably destroyed the institution of apprenticeship. Factory products have supplanted the diversified handwork of the home. The new marketing methods, reaching a wider and denser mass of consumers, like the large-scale production which called them into being, are developing large distributing organizations within which the giving of a comprehensive trade education is increasingly impossible. Even in agriculture the new spirit of scientific method and commercial enterprise is displacing old custom. The farmer's children can no longer trust the wise saw and ancient precept handed down from the elders.

The business man is apt to take the schoolmaster to task for a great gap in our educational equipment, the absence of satisfactory vocational training, for which the business man's modern methods are largely responsible. The school must take up this burden, almost altogether relinquished by industry and trade. But before it undertook this perplexing problem it had a still greater task to perform. The development of political democracy, with its wide extension of the ballot, has carried with it the obligation of public and universal elementary education. The democratic theory of the modern State can not tolerate illiteracy; if the great experiment of democracy is to succeed, it must demand as its first requisite an intelligent electorate. Education for citizenship, therefore, has been the first obligation of the school, above all necessary in the young Republics of the American Continent, to which a great and composite immigration has been streaming. The fulfillment of this task has, it is true, fallen short of the ideal; in equipment and methods the work even of elementary education is still far from completion, but the most severe critic must admit that the past century shows in this direction an accomplishment of astounding magnitude, unprecedented in the history of civilization.

The problem of vocational education is met in the stages above the most elementary instruction, and here the democratic ideals of the young republic have combined with educational conservatism to check an early differentiation in the character of the training. Such differentiation is easier in a stratified society with clearly marked, traditional class distinctions; but in one where the ideal of equality of opportunity exists and where in fact the rapid extension of population in newly settled regions has opened wide to all the door of opportunity, there is a reluctance to force the child to an early choice of vocation. When parents, as a general rule, seek for their children a station in life higher than their own, they tend to choose that school in a free public-school system which keeps the choice of career open rather than that which definitely determines it. This perhaps somewhat vague impulse toward the open door and the consequent postponement of decision helps to account for acquiescence in the non-vocational character of much of the education in the high schools and colleges of the United States. The school on its side has hesitated to assume the increased responsibility of directing the vocational destiny of its pupils. Until the higher school, therefore, has tardily come under the serious pressure of its social and economic environment, it has been content to follow the scholastic ideals appropriate to the different social class for which in earlier times its educational facilities were provided.

It is clear that for mastery in any skilled occupation there must be systematic training for the chosen vocation. Our difficulty has been that, with the unavoidable withdrawal of the business man from direct educational guidance and with the comprehensible reluctance of the school to undertake the new responsibility, the boy and girl were ill equipped for the work of life. Too often there was no systematic training at all. Not only was there a failure to meet the economic needs of the world outside the school, but with the absence of a definite vocational motive there was also a failure to interest the pupil in the deferred values of the studies pursued within the school. The school was rendering service with its broadening cultural studies, but it was not satisfactorily fulfilling its function either to society or to the individual. This has been to a large extent true both of the high school and the college.

During the last generation, and notably within recent years, there have been numerous educational experiments to meet this deficiency. On the side of industrial training, agencies of varied character are coming into existence which seem to be leading to a solution of the problem. The industrial night school, and especially the compulsory continuation school, can supply the need for those large classes who must leave the day school at an early age. The trade school, when well planned in cooperation with the local industries, seems to answer its purpose but is limited in its applicability. For the higher training, technical colleges have long since passed the experimental stage.

But in the field of commercial education the situation is less well developed. This is largely due to the fact that, except for purely clerical work, such as stenography and bookkeeping, the demand from the business world has only recently become insistent and specific. The tradition of education within the business has here persisted, although the opportunity for systematic training within the concern has diminished with the growth in its size and complexity. Some of the larger business organizations have established "store schools" or "corporation schools"—a significant recognition of educational needs. These vary widely in scope and quality, but even at their best have only a limited effectiveness. They are possible only for businesses of considerable size, and they necessarily tend to emphasize the specific methods and practice of the particular concern. But they nevertheless point the way toward the advantage of close cooperation between theory and practice. The smaller concerns may cooperate with others in their own line of business to provide a type of instruction analogous to that aimed at by the corporation school, but they are more likely to throw this burden on the public-school systems, not merely because thus they will save trouble and expense, but because in the long run the school will be

better equipped as a specialized social function to perform efficiently the task of vocational education. The ambitious plans of some advocates of the corporation school may be regarded as the expression of pioneer enthusiasm in a new movement, valuable as an indication of the educational current and as a transitional experimentation. But ultimately the spheres of private and public agencies will be more clearly delimited. The individual business, for instance, will instruct its young salesmen in the qualities and selling points of its own products, in the rules, traditions, and policies of the organization, but it will expect them to bring from their school training a disciplined mind and also some knowledge of market organization, of the principles and methods of salesmanship, and some practice in the analysis of elementary marketing problems. The business man will build on a sound vocational foundation already laid in the school.

The progress of commercial education in the past decade and the increasing evidence of a widespread demand for such education warrant the belief that the schools will respond soon and with growing effectiveness, not only in volume, but in quality, to an intelligent demand. The commercial night school and the continuation school have their highly important part to play in this movement, since the great majority of those entering trade as well as industry must continue to come from the grammar school. But it is especially to the high school and the college that the business world must look for its best regular recruits to the commercial service. Influenced by the early example of the successful private commercial schools, the high schools have long offered so-called commercial courses of limited scope. For many years classes in stenography, bookkeeping, and a little commercial geography have found a place in the curriculum of many high schools. Their place was humble and their ambition was humble, but they have established a footing for commercial studies and can now furnish a starting point for the further development which has already begun. Cities of large population can and should afford specialized commercial high schools like those already successfully established in some of our leading centers. For the smaller cities and towns and for the greater number of high schools such a high degree of specialization is uneconomical and inexpedient. The existing and newly added business courses in the commercial department or subschool should be strengthened by more efficient teaching, with a broader vision of the significance of business activities, and they should be vitalized by close cooperation between business men and the school.

The high schools are accustomed, perhaps unduly, to look to the college and university for guidance and direction. They have been shaped in large measure by the requirements of college preparation. The enlargement and enrichment of these vocational studies will assist in their emancipation from a too dominating college influence. But it is from the college or university that they are more and more drawing their teachers and the inspiration of their teachers, and it is the university which should lead the way in the scientific study of business. The universities, fortunately, are answering the call. The vigor of this comparatively new effort in American colleges and universities is truly remarkable. Beginning with the Wharton School of the University of Pennsylvania in 1886 and expanding more rapidly during the last decade, the movement for the establishment and improvement of university schools of business administration has spread across the continent. The old endowed universities of the East are vying with the great State universities of the West. There are large university night schools, such as those in New York, Philadelphia, Chicago, Boston, and Pittsburgh, for the training of young men who have already entered their business life. For the education in business of the college student, the prevailing type of university organization is the undergraduate department or school, with business courses offered mainly in the last two years of the normal four-year period of college residence. A few institutions, preferring to encourage a longer period of general preliminary training and a maturer specialization, have organized schools either partially or wholly graduate in character—the Tuck School at Dartmouth, for example, demanding one under-

graduate year and one year of graduate study; the Graduate School of Business Administration at Harvard, requiring two years of graduate work.

College training for business is no longer regarded as an experiment. Working with varying degrees of efficiency, but with steadily improving sureness of method, the college business schools, which were founded in response to the demand from business itself, are receiving general recognition from progressive business men. In critical academic circles it is admitted that the new business studies may be of professional quality and susceptible to the scientific approach. Yet in an educational and scientific field comparatively so untrodden there must of necessity be much that is experimental, both as to the content of the study and as to the method of instruction. In certain directions the path has been fairly well beaten. Notably for such subjects as accounting, banking, transportation, and insurance there has come into existence a large literature with contributions from business practice and from economic theory. But ten years ago there was no similar body of material readily available for the instructor in the subjects most central and essential, concerned with the making and marketing of commodities and with the policies of business management. Enough had been done by the engineer and the manufacturer, working conjointly on the problems of the factory, to demonstrate that there is a science as well as an art in factory management, but the principles of that science were imperfectly formulated, and it seemed to be a question whether even the rudiments could be taught in the classroom without intimate contact with the art in the factory itself. Since, however, the development of the technical school and the science of the engineer had earlier answered a similar doubt on the technical side, there was reason to believe that the administrative problems were open to analogous attack. But while the way had here been blazed, the study of marketing was almost a trackless wilderness. Yet if preparation for trade, domestic and foreign, was to be seriously undertaken by the educator, if he was to initiate the student into a central activity of business, the mystery of buying and selling with all its complex factors, he could not be content with teaching the ordinary commercial geography, a jumble of more or less useful information, or even the economics of price making. He must go for his facts to the business man in action, collect, describe, and analyze the operations of the market, study its shifting organization and its complicated mechanism.

Obviously here is a case for the application of research as requisite to sound instruction. Some of the university business schools have already undertaken thorough and promising investigations of this kind, and the possibilities of this work as it widely extends are of the greatest importance. Research and scientific observation must be relied upon to give a foundation of reality for systematic commercial instruction in the higher institutions and also, be it observed, in the secondary schools. It will, furthermore, render a most fruitful service to the business community, which has already learned the practical value to industry and agriculture of laboratory investigation in the natural sciences and which will doubtless increasingly rely on the unbiased, objective, and scientifically disciplined assistance of university research in solving the complex problems of business policy.

The experience thus far acquired in educating for business is limited, but it nevertheless indicates clearly the wisdom of concentrating upon fundamentals and of training the student to list and weigh the factors in selected business problems and to acquire, in short, the habit of judicial analysis. It is better to utilize the growing volume of informative fact-material, gathered from a wide range of business practice, for inductively reaching general conclusions as to principles of business action, than to attempt a description in minute detail of the routine and the customs of a variety of particular trades. The initiation to detail is the task of the employer and is best left to him. No amount of preliminary schooling can absolve the young business man from undergoing a practical apprenticeship in the method of the concern he serves. But the trade apprentice and his employer under modern conditions find it

increasingly advantageous to base their specialization upon the broad general training in the theory of business which the school is learning how to give. The university business school will surely perform the function for commercial life which the law school has vindicated for itself during the last generation.

This relation of general and fundamental training to the specific training in the particular line of business, of theory to practice, holds true in the preparation for foreign as well as for domestic trade. In training young men to enter the foreign-trade field there are certain things which the school should do and some which it can not do. The studies leading to foreign trade need not be markedly differentiated from those fundamental to domestic-trade preparation. The courses in marketing methods and policies in the United States, in accounting principles and practice, in domestic corporate organization and finance, in commercial law, should be required of all students who aim at competence in commercial lines either at home or abroad. Some specialization should be provided by a limited number of practical courses covering our chief foreign markets and foreign-trade methods, together with an introduction to foreign exchange and marine insurance. The chief defect, however, of our existing educational equipment for foreign trade is in the subjects of the high school and college programs, for which, as a rule, the commercial school is not directly responsible, namely, the foreign-language teaching and the history and geography courses. The languages are usually taught as though language training was an end in itself, when in reality the control of our own tongue and of the speech of our most important foreign neighbors is an indispensable tool for the practical business of life. A history which is made merely a repellant study of dates and a geography of dry and unrelated facts can not succeed in opening the mind to a sympathetic understanding and interpretation of the humanity of other times and climes. The desiccation of these vital subjects is largely due to our national isolation and self-sufficiency, and their teaching in the lower schools, already showing signs of improvement, is likely to be greatly stimulated by the inevitable growth of our international relations. The certain result of the keener competition in foreign markets, which is impending for the United States, is the reaction upon our schools. If we learn aright the lesson of inward preparedness, of individual dedication to the national life, our schools and our scholars will be animated by a more earnest and intense spirit. Conditions of life in our new and rich continent have not hitherto called for much more than a diffusion of elementary education and an easy superficiality. There are more serious times ahead, demanding far more thoroughness and discipline in education as in all else.

However sound the preliminary school preparation for foreign trade may be, it can provide no substitute for that portion of the equipment which can only be obtained in the office and, above all, in the foreign country where trade connections must be made. Prolonged foreign residence and study are needful not merely for a thorough mastery of the language but still more for an intimate knowledge of national manners and customs, trade usages, and business organizations. Business is built up not merely by giving a service which utilizes such knowledge, but by establishing personal relationships and credit confidence. All this calls for a readiness for expatriation which is rare among the young men of this country. The apparently deep-rooted disinclination for foreign service is explainable by the facts of our national economic situation, past and present, but the deficiency in our supply of exportable talent must be remedied if the United States is to play any considerable part in the active trade of the world. The schools, higher or lower, can by themselves do little to overcome this disinclination except in so far as their more vital teaching of languages, history, and geography may produce a more appreciative attitude toward other countries in the place of our native provincialism. But they can not be expected to provide special facilities of instruction unless there is an effective demand for such training. This must come from the leaders of American business interested in securing wider markets abroad. If they want keen and energetic young Americans for

this work, they must make a career in foreign trade as attractive as in domestic trade, or if anything a little more attractive, both as to pay and possible promotion. And if they want the school to do its part in training these men, they will cooperate with the school by sharing experience, aid in planning instruction, and by providing employment. Possibly some form of international cooperation as between business concerns may be organized to provide for a systematic exchange of young men; but it will require an exceptional farsightedness and good-will to surmount the practical difficulties and prejudices which will oppose such an arrangement.

This discussion of preparation for trade, domestic and foreign, from the educational standpoint, has endeavored to explain the apparent tardiness and deficiencies of the educational system in adapting itself to the needs of its new economic environment. It has also emphasized the opportunity and responsibility of the university as leaders in the teaching and scientific investigation of business. For this a thorough cooperation is needful between the teacher and the business man. The door of commercial education is opening wide, but we have as yet hardly passed beyond the threshold. The business man will assist not only by keen criticism of the school's defects, but by patient counsel and by willingness to furnish specific information concerning his own experience, so that the teacher's theory may rest upon ascertained and tested facts.

Adjournment.

SESSION OF SUBSECTION 7 OF SECTION IV.

GEORGE WASHINGTON UNIVERSITY,
Wednesday morning, December 29, 1915.

Chairman, W. C. BORDEN.

The session was called to order at 9.30 o'clock by the chairman.

The CHAIRMAN. The first paper of the session is by Dr. D. Rivas, of the University of Pennsylvania, and has for subject "The preparatory and college education in the Latin-American colleges in relation to the study of medicine in the medical schools of the United States of America."

THE PREPARATORY AND COLLEGE EDUCATION IN THE LATIN-AMERICAN COLLEGES IN RELATION TO THE STUDIES OF MEDICINE IN THE MEDICAL SCHOOLS OF THE UNITED STATES OF AMERICA.

By DÁMASO RIVAS,

Professor, the University of Pennsylvania, Philadelphia, Pa.

- I. Introduction.
- II. Preparatory and college education in the Latin-American countries.
- III. Entrance requirements of the universities of the United States to the schools of medicine.
- IV. Teaching and research work among faculties of the medical schools.
- V. The most appropriate instruction for the practice of medicine.
- VI. The standard of the medical schools in the United States.
- VII. Minimum requirement for graduation.

I. INTRODUCTION.

A glance into the development of civilization of ancient and modern times clearly shows that its evolution is marked by periods or ages, so characteristic and distinct from each other that history has symbolized those periods under separate and appropriate epochs of the cultured development of man. Thus, from prehistoric times up to the oriental and Egyptian civilization, merely the rudiments are known; not perhaps because the ancients did not make wonderful and efficient progress, but because their history is buried in the dark days of the age in which they lived, of which only fragments and a few broken links are recorded.

At a more recent date the Greek epoch, or "the intellectual age," stands preeminently before us, because it has constituted the basis for our modern civilization. Philosophy dates her origin in this epoch, emerging as she did from the conflict between reason and religious authority. In these days, the "physicians," as Aristotle terms them, in contradistinction to the theologians, relegated the traditional gods to the domain of fable. But philosophy did not cast off the mythological garb, for the gods

were not abolished, but restored to their true nature and regarded as elements, and philosophy begins to ask herself the question, "What is the primitive element, the one that precedes the others in dignity and in time and from which the others have been generated?"

Thales, about 600 B. C., father of all Ionian schools, upon the basis of the old Aryan myth of the Heavenly okeanos, regards water as the first primordial element, the universal substance, of which bodies are merely modifications. For Anaximander and Anaximenes this primordial substance is the atmosphere and the air, or breath, respectively, and Heraclitos regards it as fire, or warm breath.

Pythagoras gives a great impetus to the development of mathematics, geometry, astronomy, music, and medicine. For Pythagoras, number is the principle of the world, and things are sensible numbers. Every being represents a number, and the final goal of science is to find for each being a number for which it stands.

The doctrines of Socrates, the materialistic teaching of Aristotle, and the idealistic philosophy of Plato may be said to embody the intellectual development of the Greek civilization.

To summarize, therefore, it may be said that the Greek civilization is characterized by the intellectual development of man; it is the age of philosophical and metaphysical speculations, when the causes of a phenomenon are explained by reasoning and logic, but not by experimental evidence. From this time down to the twelfth century A. D., the civilization may be said to have remained dormant, and the lethargy of the Middle Ages may be attributed, in part, to the lack of means of experimentation.

After the twelfth century there began a period which properly has been called "The Renaissance." We see in this time the thoughts of the Greek philosopher revived and guiding the development of our modern civilization. In this period, which may properly be regarded as the greatest epoch in the intellectual history of Europe, man, not being satisfied with philosophical and metaphysical speculations alone, searched for the truth based upon experimental evidence, and the dogmatic principles of the scholastic period gradually gave way before the discovery of printing, the compass, the telescope, and the microscope. The Middle Age underwent metamorphosis, and from the fermentation of that intellectual development of the epoch there appeared men of great originality. Columbus enlarged the earth; Copernicus widened the universe; Kepler discovered the form and laws of planetary orbits; Galileo taught the double motion of the earth, Newton the law of gravitation, and Bruno conceived the world as composed of innumerable solar systems, of centers, by postulating that the "universe is a sphere with center everywhere and periphery nowhere."

The science of biology and medicine likewise has undergone profound changes. In the ancient times the cause of disease was attributed to evil spirits, offended gods, and the like. The knowledge of medicine among the Egyptians, the Greeks, and even among the Romans, and all throughout the Middle Ages, was rudimentary, and its development may be said to have begun only after the Crusades, with the importation of the "oriental diseases" into Europe. In 1553 Vesale laid the foundation of the science of human anatomy. Harvey, in 1628, proved the theory of Servet concerning the circulation of the blood. Leewenhock discovered the microscopical world, and Lamarck founded the theory of evolution. Great advancement was made with the discovery of quinine as a specific for malaria. But it is only in the second half of the last century and in recent years that Pasteur, Koch, Manson, Schaudinn, Grassi, Ross, Reed, Carrol, Agramontes, Chagas, and others proved the cause of diseases to be due to biological agencies, and medicine cast off the garb of empiricism to become a true science.

I beg to apologize for the rather lengthy dissertation given to the above facts, but they are presented to show that, like other branches of knowledge, medicine has also

undergone profound changes, and has made such rapid progress in late years that, for the study of this science, a proper preliminary preparation is essential. The study of modern medicine presupposes a fair knowledge of biology, physics, and chemistry, and the question naturally arises whether or not the Latin-American colleges and institutions offer appropriate facilities for the study of these subjects.

II. PREPARATORY AND COLLEGE EDUCATION IN THE LATIN-AMERICAN COUNTRIES.

The college education in the Latin-American countries is generally arranged in accordance with the program in existence in the colleges of Spain and France. But do they offer the same facilities? They are indeed efficient in so far as history, geography, and more especially literature, are concerned; but it must be frankly admitted that the study of science and practical laboratory work has not received the proper attention. In most of the Latin-American colleges the preparatory education usually consists more or less of three years' preliminary studies, three years of the high school, and five or six years of college, preparatory to the entrance to the university. During these 12 years a very efficient preparation is given to the student for the academic studies and literature in particular; a fair education is given in science, but the practical laboratory work can not be considered as first class.

What is the result of all this? Your boys, upon coming to this country, on presenting their credentials are found, to a certain extent, unfit for the difficult task of studying medicine, which, as may be understood, requires a thorough preparation in biology, physics, and chemistry. If to this is added the disadvantage of not knowing English, it is easy to realize the difficulties in pursuing the studies. It is, therefore, time to awake to the circumstances and modify the preparatory education in your colleges. It may not be out of place here to say that the Latin-American countries, as well as the United States, formerly looked to Europe for the education of their youth, because, no doubt, they had better opportunities there. Only a few years ago you preferred Europe for the education of your sons, but judging from my experience I see that you are now inclined to send them preferably to the United States; and this is only natural, because, while this country may not have better universities than those in Europe, nevertheless they are not inferior; and in regard to the medical schools, judging from my experience as a student in the Universities of Paris, Lille, Berlin, Heidelberg, and Gratz, I feel justified in saying that our schools offer opportunities equal to those of Europe, and in certain branches, especially surgery, asepsis, and practical work, our facilities rank with the highest.

III. ENTRANCE REQUIREMENTS OF THE UNIVERSITIES OF THE UNITED STATES.

To the schools of medicine.—The requirements for admission to the universities in the United States are usually as follows:

High school, and two years of preparatory studies in biology, physics, and chemistry, or a "B. S." or "A. B." from college. Those of you who have had your preparatory education for the study of medicine in this country will remember that in the courses of biology, physics, and chemistry special attention is given to laboratory work. We neglect, it is true, the studies of philosophy, economics, and some other subjects important in themselves, but not essential for medical education, as they properly can be relegated to other specialties; and if a comparison is made between the preparatory course in the United States and the Latin-American countries it will be seen that the practical and laboratory work, as already stated, is deficient in some respects. I can not too strongly emphasize the fact that since you look to the United States and not to Europe for the education of your sons, you and your Government should make an investigation of the studies in the colleges and universities in this country and modify the program of your preparatory education accordingly.

IV. TEACHING AND RESEARCH WORK AMONG FACULTIES OF THE MEDICAL SCHOOLS.

Teaching and research work are commonly mingled in the medical faculties of the universities of the United States—a thing which, in the speaker's opinion, should receive more careful consideration. As a matter of fact, we should realize that each, to a certain extent, belongs to different fields of work. The teacher's duty, of course, is to put before the pupil the facts which either through common consent or by actual demonstration and observation are generally known to be truths. The research worker or investigator, on the other hand, is concerned with the demonstration of those facts, and if he happens to be also a teacher his view must be impartial and debarred of any undue enthusiasm or personal belief which is apt to lead to unorthodox interpretation, and his results must bear the test of time and corroboration before they are taught.

It is, of course, a hard thing to decide who is a good teacher and who is a poor one, but it may not be difficult to understand that a good teacher, as a rule, is not the one who makes the most brilliant dissertation in the lectures, but the one who has personal qualifications, and above all the one who does not teach indiscriminately, but especially knows what not to teach.

V. THE MOST APPROPRIATE INSTRUCTION FOR THE PRACTICE OF MEDICINE.

The duty of the medical instructor is, first of all, to make of the student a physician—a man who, as the profession implies, should take into his heart the welfare of the community at large and of his patient in particular. For this simple but essential principle it requires conscientious study of the fundamental subjects of medicine—*anatomy, physiology, physics, chemistry, and pathology*—which are taught in our universities in the first and second years; a thorough and practical instruction in surgery, medicine, and their branches which are given in the third and fourth years. In my experience as a student and teacher in the University of Pennsylvania I have become thoroughly convinced of the efficiency of the institution in expounding these subjects, and I am sure that everyone present who has studied medicine in this university will agree with me that a glance at the program of the four years' course clearly shows that none of the important branches are neglected. So far as the present knowledge of science requires, theoretical and practical branches are taught in an efficient manner. It is well known that there is an abundance of material placed at the disposal of the students in the hospitals of Philadelphia, where the common and the most rare diseases of man can be seen. We are not even lacking in material for the study of those diseases peculiar to the Tropics, because Philadelphia, by virtue of being a port and near to the tropical countries, the intercourse with the South supplies us with sufficient cases for the study of those diseases. I may be excused for praising the University of Pennsylvania, my alma mater, if in doing so I merely express an impartial view and the experience of my connection with the institution for the last 20 years; but, of course, this distinction does not belong to the University of Pennsylvania alone, as many other universities in this country, like Harvard, Columbia, Yale, Johns Hopkins, Chicago, California, Tulane, and many others, afford equal facilities.

VI. THE STANDARD OF THE MEDICAL SCHOOLS IN THE UNITED STATES.

The improvement of our schools through the efforts of the American Medical Association for the last five years has been crowned with remarkable success. Of the 92 medical colleges which have ceased to exist since 1904, 52 were closed by merger and 40 became extinct. This rapid diminution in the number of colleges, began with the creation of the council on medical education of the American Medical Association in 1905. The largest number closing in a single year was 10 in 1907, when the council's first classification of medical colleges was prepared; 13 in 1910, when the second classification was published; and 14 in 1913, when the third classification was made public.

The number of colleges is growing smaller and is approaching more nearly the normal for this country. But the high-grade, stronger medical colleges are constantly increasing. There are still 16 cities, each of which has two or more medical schools, and in two of these mergers are scarcely possible, owing to the fact that the schools are for different races, leaving 14 cities where mergers are still possible. The cities and the number of colleges in each are: Chicago, 8; New York, 7; Philadelphia, 6; Boston, 4; San Francisco, 3; St. Louis, 3; Washington, 3; and there are two colleges each in Ann Arbor, Baltimore, Cincinnati, Columbus, Iowa City, Los Angeles, and Omaha. In 1904 there were 24 cities having each from 2 to 14 medical schools.

Illinois has heretofore had the largest number of medical colleges, but now the first place is held by New York, where there are 10 colleges. Illinois has 8, Pennsylvania has 7, and California has 6 colleges. Illinois still has the largest number of students enrolled, having 2,213 matriculants last season, followed by New York with 1,117 and Pennsylvania with 1,458. All this tends to show the high standing of most medical institutions in this country and the earnest consideration which the study of this subject has received in the late years.

VII. MINIMUM REQUIREMENT FOR GRADUATION.

The minimum requirements for graduation comprise four years of study in medicine. In addition to this, in some of the States, a year of hospital service is required. I can not too strongly emphasize the importance of this to you. There is a general tendency in the Latin-American countries to regard the study of medicine complete after the four years of studies and the granting of a diploma, but these four years of studies, good as they may be, are not sufficient, and one year at least of hospital experience is most desirable to have. As a matter of fact, gentlemen, I will advise that your sons should have hospital experience before returning home, because, though the diploma makes the doctor, it is the experience that makes the physician.

The CHAIRMAN. Dr. Rivas's very admirable paper is one which should have particular appeal to the Latin-American peoples. The Chair would be very glad to have his paper discussed.

Mr. BALDY. The paper opens up a very live question, and one which must be met. This question has been raised recently in Pennsylvania and is now at issue between the schools and the bureau of education of that State. First, I might say that the State law requires that the bureau of education pass upon all preliminary requirements for the State of Pennsylvania before any school can accept a student in pharmacy, dentistry, or medicine. Some of the schools have tentatively ignored this matter of law in the case of the South American students and have admitted to their classes male applicants from these countries without having had the bureau pass upon their preliminary qualifications. A complaint from one of the schools in regard to other schools so doing, stated that this school was not doing it. Of course, the bureau had to take official notice of the complaint. All schools were officially notified by the bureau that they must at once secure from the students in their classes a certificate of preliminary work, without specifying why. This brought at once the subject to issue, and there has been an objection from some of the schools, notably the University of Pennsylvania, the one among all others from which we should least expect

such objection. As a matter of fact, I think one school entered a formal complaint of the order—I say order, because such notice from the bureau is an order. It was distinctly understood and it will be enforced.

It is pointed out that the students from the South American countries are not in a position at all times to secure the preliminaries, and, as has been so clearly brought out in the paper by Dr. Rivas, their deficiencies have been strongly suspected. The lack of these qualifications is in the laboratory, which in this country has come to be looked upon as the *sine qua non* of the preliminary education. The attention of the South American colleges can not be too closely called to this situation which, as Dr. Rivas has pointed out, still obtains in almost all of the South American countries. It means one of two things, either we must close the doors of the universities to these applicants or we must wink at the deficiencies of the colleges in those countries, which we do not and will not do in the case of applicants in our own country. This is plainly the situation which faces us, gentlemen, and I can see no other solution. There may be found some way out of this difficulty. We are not at all set in our ways at the Pennsylvania universities. The tendency of the bureau has been, in administrative duties toward medical students, to try and tide over the temporary difficulties, aiming for the future.

The CHAIRMAN. Is there any further discussion?

The next paper is on "The premedical education in biology," by Dr. Paul Bartsch, of The National Museum, Washington, D. C.

THE PREMEDICAL EDUCATION IN BIOLOGY.

By PAUL BARTSCH,

Of the United States National Museum.

It was with pleasure that I accepted the invitation of your committee to address you on a topic which has been dear to my heart for many a year—a topic upon which I have not only pondered, and about which I have formed pet ideas, but one to which I have devoted precious years of practical application. In this contemplation I have enjoyed the advantages which the double opportunity of serving as the head of the department of zoology in a university and also as the director of the histologic and physiologic laboratories of a wide-awake medical department present.

It was this combination of duties and the opportunities connected therewith that have enabled me to look deeply into the needs of the medical student, on the one hand, and has also provided the chance to see to what extent it is possible for the university to meet the demands of modern "premedical requirements." I have patiently listened for hours to lengthy and vigorous discussions of the annual conferences of the council on medical education of the American Medical Association,

and have watched the formulation of laws and recommendations which, though they seem ideal when viewed from the medical standpoint, prove at times entirely impracticable when considered from the university side. As a complete compliance with these rulings would frequently require great readjustment of the courses offered in the prescribed subject by the universities, and there are few universities, I dare say, that could, even were they willing, disarrange interdigitating schedules of large departments to meet the especial needs of the few students who will be destined to pursue medical studies after having met the entrance requirements prescribed by the American Medical Association.

If one passes in review the educational activities of the last 25 years one is forcibly struck with the fact that the applied sciences have been receiving an increasing amount of attention from year to year, and foremost among these the art—I wish I might say science—of medicine. There can be no doubt in the mind of anyone that the much-debated report on "Medical education in the United States and Canada," by Abraham Flexner and Henry S. Pritchett, to the Carnegie Foundation for the Advancement of Teaching, linked with the activities of the council on medical education of the American Medical Association and the Federation of State Medical Boards of the United States, have produced epoch-making results. They have not only removed the undesirable, unequipped, make-believe institutions, but have effectively strengthened those suited to carry on the work. It is a pleasure, therefore, to look back to see what has been accomplished in the last few years, but even a greater one to look forward to the days when the medical schools will be filled with students possessing a basic knowledge of those sciences that form the very foundation for the specialized field of medicine.

At the present time a student is required to present credits for a year's college work in physics, chemistry, biology, German, or French. Unfortunately the impression still seems to linger in the minds of many university professors that the premedical work is intended to serve chiefly to increase the cultural element of the students' training. On the other hand, many of the medical faculty consider the weeding-out process to which the preliminary work will subject the applicants as its main function. It goes without saying that both are wrong, for each of these judgments displays an unfamiliarity with the full needs as well as the possibilities offered by the premedical work. If the university professor would take pains to examine the medical curriculum, as it stood before this definite premedical requirement was introduced, he would note that it was entirely unreasonable to believe that any student, no matter how brilliant, could have done justice to the enormous field of studies required of him during his four years of medical work. It should therefore be frankly stated that those premedical years are intended to unburden the medical curriculum by transferring the general basic courses in physics, chemistry, zoology, and botany, as well as the languages, which formerly were taught in the medical course, from the medical to the premedical curriculum, thereby lightening the burden and giving greater freedom for clinical studies during the student's last two years in the medical school. The premedical work therefore really represents a lengthening of the medical course, and should be considered assigned to the university solely because the university is the possessor of the necessary faculty and the equipment especially fitted for carrying on this work.

The requirements of the council on medical education of the American Medical Association have, in the short period that they have been in force, called forth considerable protest on the part of the universities, not because the universities were unwilling to furnish instructions in the desired subjects, but because the number of hours called for in the various subjects in the regular courses were as a rule less than those given by the university. At first sight the solution seemed simple, you will say; let the premedical student subscribe to the complete course, the additional knowledge will not hurt him. This is true, but all these required sciences are labo-

ratory courses, and it frequently happens that the hours for this work interfere with each other; but even if this could be avoided I fear that the student would be taxed completely beyond his strength to master full courses within the limit of a single year. Fortunately this difficulty will disappear with the introduction of the two years' premedical college requirement, which is soon to be put into effect.

It is not my wish to discuss the premedical work as a whole this morning. I simply desire to call attention to a single phase of it, the so-called biological requirement.

The ineffective hybrid botanic-zoologic course, consisting largely of lectures offered by many colleges in this country to beginners, under the name of biology, should not be accepted as meeting the needs of the premedical student in this science. I feel that botany and zoology should be substituted for it. A real study of biology demands as prerequisite a basic and comprehensive knowledge of the animal and vegetable kingdoms, and this my experience has shown is rarely possessed by the student enrolling for premedical work. The student who has enjoyed a thorough modern systematic course will have enough information about life processes and properties to serve as a basic groundwork for more extended study.

While I feel that the course which I suggest would not be as popular as the one largely devoted to brilliant lectures, I nevertheless am inclined to believe that in these days of laboratory effort the laboratory course providing the possibility of acquiring skill in technique is strongly indicated, and I would reverse the order prescribed and say 160 hours laboratory work, including of course the necessary introductions, directions, and explanations by the instructor, and 34 hours of lectures.

Where it is necessary to limit the student to the one course I would prescribe zoology, for the field of animal parasites has long since outstripped that of the disease producing plants, and when you add to this the insect carriers of both animal and vegetable diseases, and the training in comparative anatomy, then botany assumes a comparatively insignificant rôle. Even as therapeutic elements the animal products are rapidly assuming, if they have not already attained, a value equaling that yielded by the plants.

I will now take the liberty to give a brief outline of what should be included in a course in systematic zoology for the premedical student. This course is to cover one year of six periods a week, or the work may be divided into two years of three periods a week. In either case the first half should be devoted to a consideration of the invertebrates—i. e., the first 11 phyla out of the 12 into which the animal kingdom is divided; and while the second half should be devoted wholly to the Chordata.

Now, let us see what I would offer my premedical men in zoology.

I would devote five weeks to protozoa, for a knowledge of these unicellular organisms forms a splendid groundwork for the understanding of cell structure, cytology, histology, embryology, physiology, heredity, biochemistry, and the discussion of living matter and the phenomena peculiar to it. In addition to an examination of the usual nonpathogenic living material and permanently mounted specimens, I would call their attention to the important rôle played in the human economy by some of these organisms by citing the more important parasitic members while passing the various classes in review. I need only mention such names as *Endamoeba histolytica* Schaudinn, to say nothing of the 20 or more additional species of this genus, and members of other genera belonging to the *Rhizopoda* that disturb man at times.

Of the *Mastigophora* (the Flagellates), *Treponema pallidum* Schaudinn and *Treponema pertenue* Castellani, and some of the host of Spirochetes and Monadids, and the Trypanosomes, should be discussed. Of course we are not forgetting *Euglena*, *Pandorina*, and *Volvox*, and the contributions offered by the latter in the discussion of sex.

The *Sporozoa* bring malaria with its wonderful history and the insects as disease carriers prominently into the foreground, while *Coccidium*, *Babesia*, *Bartonella*, and others may be touched upon as strongly as time will permit.

The *Infusoria*, while of less importance from a medical standpoint than the other classes, nevertheless lend themselves splendidly for demonstrating the extreme complexity, differentiation, and specialization that has been attained by the bit of protoplasm, a single cell, that constitutes these marvelous animals.

Phylum Porifera.—I would devote a single week only to these animals, which give us the first development of the primary blastodermic layers—the *ectoderm*, *mesoderm*, and *entoderm*—so dear to us in tissue classification in histology. But I would call attention, and that strongly, to the undesirability of a toilet sponge as an adjunct to the bathroom by picturing its habits of serving as a filthy breeding place for bacteria.

Phylum Coelenterata.—I would give three weeks to the group, which is a large one of considerable zoological and geological importance. It also gives us splendid pictures of the *gastrula stage* as a group attainment, and we also see here for the first time specialized nerve cells, and learn the part played by the nematocysts, a function which may bring the physician dwelling at the seaside an occasional call.

Phylum Platyhelminthes.—We will have to do some very intensive work in the two weeks allotted to this group. In this time the student will examine entire and sectioned material of the liver fluke (*Fasciola hepatica* L.) and the beef tapeworm (*Tænia saginata* Goeze). The lecturer will discuss the life history of both. He will also touch upon the other platyhelminthes found parasitic upon man, particularly the Trematodes, *Paragonimus westermani* (Kerb.), and *Schistosoma haematobium* (Bilharz) and the Cestodes, *Tænia solium* (L.), *Tænia saginata* (Goeze), *Dibotriocephalus latius* (L.), and *Hymenolepis nana* (v. Sieb.).

Phylum Nemathelminthes.—To this I would devote three weeks and I would select as typical material for detailed study *Ascaris lumbricoides* (L.), *Trichinella spiralis* (Owen) and *Ancylostoma duodenale* (Dubini). I would also call attention to the rôle played by *Filaria*, *Trichocephalus*, *Oxyuris*, *Echinorhynchus*, and other forms, as well as a general impression of the modern concept of the importance of the nematodes as viewed from the standpoint of the agriculturist.

Phylum Trochelminthes and *Phylum Molluscoidea*.—I would give a week each to these two phyla. As far as known, no special importance from the medical viewpoint attaches to them, but we have interesting larval forms introduced that shed considerable light on phylogenetic relationships.

The same remarks apply to the next phylum, that of the *Echinodermata*, which should receive three weeks of time.

Phylum Annulata should receive four weeks of attention. It bears a direct interest to the medical student, since it includes the medicinal leech and the land leeches, with which those of you who have worked in the Tropics are sufficiently familiar, so I need say no more about them. Here also we get our *hirudin* for our physiologic experiments. Of course, the enormous development of the group on land and in the sea will not be overlooked.

Phylum Arthropoda.—Six weeks—with emphasis on the *Myriopoda* (centipedes), *Arachnida* (mites, spiders, and scorpions), and the true insects. The importance of these forms as disease carriers becomes more manifest with each day, and the time allotted will permit our students to get that general grounding which must be expanded as their needs increase.

Phylum Mollusca.—Four weeks should be given to this, the highest of the invertebrate groups; and this brings us to the close of the first year, if the work is divided into two years, or to the end of the first half, where a daily attendance is required.

The second year is less complex, but not less important. It deals solely with the *Phylum Chordata* (our own near relatives). In this I would consider the following types representing the different classes into which the Phylum is divided:

	Weeks.
Adelochorda— <i>Balanoglossus</i>	2
Urochorda— <i>Molgula</i> or <i>Ascidia</i> or <i>Salpa</i>	2
Euchorda— <i>Amphioxus</i>	3
Cyclostomata—Lamprey (lectures only).	
Elasmobranchia—Dogfish.....	4
Pisces—True bony fishes (lectures only).	
Amphibia—Frog.....	3½
Reptilia—Snake.....	3½
Aves—Pigeon.....	4
Mammalia—Cat or rabbit.....	10
Total.....	32

This work, superimposed upon the students' efforts with the Invertebrate groups, should give him a basic working knowledge of the animal kingdom. He should know where each system of organs made its first appearance and the modifications that it presents as one passes from group to group, from the simple to the more complex.

I wonder how many of my hearers would be able to tell me where we find the first indication of the paired limbs, the arms and legs, and where the first manifestation of the humerus, ulna and radius, carpals, etc., or femur, tibia, and fibula, etc.—that is, the one-two-many arrangement of the limbs. Or where the teeth, our endoskeleton, the central nervous system, or any of the other systems, for that matter, have their origin. Yet these are things that you can not escape if you follow the course that I have outlined. Embryology becomes easily understood because our lecturer has shown us lantern slides depicting the main story of the life history of each type selected for discussion, while to anatomy our student will bring a knowledge and skill that will render his dismemberment of that most highly specialized of all mammals—man—not a gruesome, bungling task, but an intensely interesting comparative study of the most refined type.

Then, too, we must bear in mind that the future trend of medicine is headed altogether toward prophylaxis, which requires more than a general knowledge of the fundamental life processes common to all living matter; it demands a knowledge of that intimate relationship and interdependence that exists between the various organisms of our sphere—a knowledge most readily obtained in the manner suggested.

I do not wish to weary you, but only plead, for the sake of the future medical man, to substitute zoology—or, better yet, zoology and an equivalent course in botany—for our so-called biology of the premedical curriculum.

The CHAIRMAN. We have listened with great interest to Dr. Bartsch's most excellent paper on "The premedical education in biology," which is particularly pertinent in connection with Dr. Rivas's paper. It has seemed to me that with the two years' college requirements of the American Medical Association there may arise certain difficulties in the way of accepting students from South America. It has been the dream of the American medical educator to have as large a number of students as possible from the South American countries entering our American medical educational institutions. I would therefore be very glad to have Dr. Rivas discuss the question at this moment as to what effect, if any, the new requirements of the American Medical Association of two years of college

work would have upon the admission of South American students to our medical institutions. Dr. Rivas, could you give us any information upon that point?

Dr. RIVAS. I fully agree with all that Dr. Bartsch has stated in regard to a preliminary medical education in biology. The name biology implies so many subjects, such as botany, zoology, and other branches, many of which have importance as a preliminary education for the study of medicine. Zoology is of particular interest. In giving, therefore, the requirements for the study of biology it will be better to state in clear terms, as Dr. Bartsch has said, that certain men need the study of zoology in covering such and such a subject, and not merely a preliminary education in biology which may imply other subjects of no especial interest or interest as a preliminary education for medicine. In respect to the question I was asked, I shall say that this requirement is absolutely essential. Europe requires six years of medical but only two years of premedical education. That is the situation I find abroad with respect to premedical education in general.

The CHAIRMAN. Is there any further discussion? Has Dr. Bartsch anything to add in conclusion?

Dr. BARTSCH. It will probably not be amiss to make a few remarks along this line. There is a tendency in the study of biology to follow the facts. That is the reason why I offered this particular outline which I think is suited, with such modification as may be deemed necessary, to serve as a basic outline. It gives the things that every medical student should possess, and especially avoids the spending of time along lines which need very little time and which lead nowhere. I think there is a tendency, particularly in the American university, to follow the great leaders in their investigations, and in following them to forget that it is necessary to have first of all a foundation upon which that superstructure might be built. That was my aim in presenting this outline which I consider an exceedingly simple and basic one.

The CHAIRMAN. The next paper is on "Medical education," by John M. Baldy, M. D., Philadelphia, Pa.

MEDICAL EDUCATION IN THE UNITED STATES.

By JOHN MONTGOMERY BALDY,

President Pennsylvania Bureau of Medical Education and Licensure.

With the publication of annual reports on medical education, commenced in the Journal in 1901 by the American Medical Association, began the history of real medical education in the United States. The following year the work was taken up formally and continued by a committee on medical education of the association, which committee was later merged into the present council on medical education. The contin-

uing and progressive work of this council, supplemented in 1910 by the publication of the Carnegie Foundation, gave an enormous impetus to the movement. Like publicity in all other matters, these publications, which exposed to the public and to the medical profession alike the miserable pretenses which existed, caused the beginning of what might be called modern medical education in this country. Five years prior to this time the council on medical education of the American Medical Association had taken up the subject of existing low standards, and had been making a valiant fight for improvement. The Carnegie Foundation publication came very opportunely to the rescue of the council's efforts, and gave such an impetus by its pitiless exposure that in the intervening period such a change has taken place as is almost marvelous; which, had it been predicted, would have been considered the fancies of a madman.

The final standards in the United States are hardly yet established; the future is being trusted to for much. In this country of State rights, things do not progress evenly, and the progress of medical education is no exception. But this may be said, that the revolution has progressed so far as to assure the future absolutely and that within a comparatively short period.

Behind the movement stands first and foremost the council on medical education of the American Medical Association. But even this body has not been able to live up to its announced standards on account of the inequality already referred to. Certain sections of the country constantly are found unable to travel the pace, and have lagged behind until finally the council has adopted as its standard policy to go only just so fast as the slowest might be able to follow. Of course, this does not mean that the sluggard is allowed to dictate how fast its pace shall be, but practically its sluggish movements have had a measurably potent influence on the pace. In the main the council's work has been so well done that it would seem to be hypercritical to question its wisdom in modifying its decisions. Possibly also in the long run those who have been and are dissatisfied with some of its actions will admit in their final judgment that it has acted wisely. And yet it would seem in some essential instances that it might have "stuck more closely to its guns." Nothing is ever builded for permanency without a sure and solid foundation, and nothing in the way of technical education can be builded soundly without the foundation of preliminary requirements. A weakness at this point is a weakness along the whole line, and where advance could be made rapidly at various points, a weakness in this element impairs the finishing of the whole superstructure.

On paper the medical standards of education in the United States at the present day are a preliminary education of a satisfactorily completed four years' high-school course plus a year of college work in chemistry, physics, biology, and a modern language, to be followed by a four year graded medical course, the first two years of which are devoted to the laboratory subjects and the second two years to the clinical features, and then a year's practical training as an intern in a hospital. This standard, which is the "ideal standard" of the council, is in process of attainment, and the signs of the times indicate that it surely will be reached. When once attained, this standard will be the equivalent of and equal to that of any country on the face of the earth. One can not make a systematized comparison between the medical standards of the various countries because of the fact that they differ in essentials in many respects. For instance, the German standard is founded largely on the laboratory, the English standard is founded largely on the hospital, and it will be seen that the standard of the United States is one which attempts to select the good from both of these standards—that is, the laboratory and the hospital are duly and equally emphasized.

How far, then, has this country been able to attain that which is its ideal? It is hardly just to judge the standard of a country by the standards attained in certain sections. But, on the other hand, it is unfair not to bring in sharp relief the fact that certain sections have measurably approached the more nearly ideal than has the coun-

try at large. This is more true of this country than any other, as has already been pointed out, because of our multiple standards of control, due to State rights. The fact that certain sections of the country have approached more closely to the ideal and are well on the way to the completion of that approach is sufficient evidence that in time all the country will be on the same footing. In studying the situation as it exists to-day, it is just, therefore, that that portion of the country which is most advanced in these matters be taken as the basis of discussion; consequently I will use the State of Pennsylvania as a peg on which to hang my comments.

As has been stated, the real foundation, without which no superstructure can stand is the preliminary requirement. Under the yielding and leadership of the council on medical education of the American Medical Association, this foundation has been and is weakened. Whatever may be the excuse, the facts remain the same, and until the day comes that this Association insists that all subterfuges and all evasions be done away with, the superstructure can not be finished. The reasons given for allowing the student to enter the medical school with conditions in his preliminary work may be basically sound, but the fact remains that it has so weakened the superstructure that it has made it exceedingly difficult for those States wishing and endeavoring to live up strictly to the announced preliminary to hold their course. I myself am strongly of the opinion that the allowance of conditions at the present stage of development is entirely unnecessary and uncalled for and is holding back the desired end; not only the length of time that these conditions are being allowed, but many years in addition. The Pennsylvania medical schools have been in no better condition to enforce preliminary requirements, if one is to accept as true the report of the Carnegie Foundation, than are those in many other sections of the country. And yet Pennsylvania has been able for the past two years to enforce strictly the fulfilling of the preliminary requirement. No school in that State allows of conditions to the applicant entering the medical school, and this in spite of the allowance made by the council of the American Medical Association, which conditions are so widely taken advantage of by many schools.

The constant result of the inequality as established by this council is that applicants are rejected on account of deficiency by Pennsylvania schools and immediately cross the border into a neighboring State and are admitted to schools which are just as well and better able to stand the financial loss. It has been contended and it is true, as has been demonstrated by the Pennsylvania schools, that a strict enforcement of the preliminary requirements has caused a loss to the class of two-thirds or more of its personnel. But, on the other hand, it has been equally demonstrated that this loss is a mere temporary one and that the reaction begins immediately. The second class following the strict enforcement of the preliminary shows not only a marked increase but an increase fully equivalent to one-half or more of the previous loss, and thereafter there is a steady and healthy increase, as far as numbers are concerned. I am not pretending that Pennsylvania is the only State having schools enforcing the proper standard. I am merely using it as illustrative of what is true of all of the better colleges in the country which are enforcing their requirements strictly, irrespective of irregular standards encouraged and allowed by the council of the American Medical Association. However, the council has promised that in 1917 these allowances shall cease. Therefore, it is in sight that as far as preliminary requirements are concerned, this country will be fully up to its ideal standard. Of course, this will mean the elimination of a few more of the medical schools already in the field. The actual shrinkage in the number of schools began in 1907, following the presentation of the first classification of medical colleges by the council on medical education of the American Medical Association, and the movement for betterment since then has been continuous. This shrinkage has been going on more or less rapidly—certainly steadily—ever since, and there are possibly 15 or 20 schools to-day in existence which will not be in existence at the end of the next five years. Whether it is possible or

not that the leniency displayed by the council on medical education has saved thus far some of the existing schools, the more important question involved by its action is whether these schools were worth saving and whether they will not finally succumb.

Presumably a knowledge of the branches removed from the medical curriculum and injected into the preliminary course are basically necessary to a full appreciation of the branches retained in the medical curriculum itself. This is one view of the desirability and necessity of an advanced preliminary education in medical matters. The other view on this matter is well maintained by President Lowell, of Harvard University, in a paper read before the Tenth Annual Conference of the Council on Medical Education. This view embraces the cultural idea of the college work rather than the utilitarian. These two views, diametrically opposed to each other, have largely been straddled by the council in its efforts to satisfy everybody. Certainly one in administering these affairs can not act in a dual capacity; administration must be based on either one view or the other if it is to be successful. "Culture" in education is like a great many other words—widely used, but with no common basic understanding as to what it means. Certain it is that culture can be derived from college studies of a scientific character just as well as it can from general college topics and the man who can not acquire culture in his scientific work will be unable to acquire culture in his classical work. To draw such a line of distinction is absurd. The practical point involved is, Is a man who is looking forward to devoting his coming studies to a technical subject to give an undue amount of time to purely so-called culture and to neglect deliberately in the acquiring of that culture those branches which are basically necessary to his understanding of his future technical work?

Pennsylvania has decided in the negative in this matter. The State law requires a year of college work, specifying the minimum amount; not only the minimum amount of work, but also the minimum number of subjects which may be included, namely, physics, chemistry, and biology. The schools of Pennsylvania, advancing one step further than the State, require in addition a modern language. A number of Pennsylvania schools have themselves increased these requirements to two years of college work, but these two years must include the amount of science specified in the State law. It may be that a man is unable to acquire the amount of culture in college work of this type that would be acquired by him were he to omit this amount of science and substitute for it the ordinary college branches as laid down in the curriculum of the literary colleges. I myself not only doubt this, but also do not believe it. In any event, if he does lose a bit of culture, he has attained so much more basic knowledge of that which is necessary for his understanding of his future studies that he will run away with the college man not having had the opportunity to take this science work. Pennsylvania, therefore, administers on the supposition of the science work as essential and that culture will follow as a matter of course, with an equivalent length of time. I am well aware of the fact that this is flying in the face of the opinion of many of the educators of the country, but nevertheless I am perfectly confident that time will prove the correctness of this decision.

The medical curriculum, being freed from the basic sciences, has been able to adjust itself to a definite standard. This standard has been evolved by the adaptation of parts of both the German and the English systems. It has been believed by medical educators in the United States that neither of these systems is adapted to our native soil, however much they may be so to the soil of the parent country. The first two years of the curriculum have been devoted to that portion on which the German school is based, namely, the laboratories. The final two years of the medical course have been given over to that portion which is especially emphasized by the English system—bedside instruction. The curriculum throughout the whole country is largely standardized to-day, and there is very little difference in the work done in the different schools of better class, those schools which are likely to live. It has been fully recognized, however, that four years is all too short a time for any candidate to learn

much more than the facts of modern medicine, and that in the final two years it is impossible to give a sufficiency of practical application of the facts of medicine to round out the candidate's knowledge. Consequently the council on medical education in its ideal standard advised a year's practical training as intern in a hospital.

The hospital year is intended to be a year in which the student begins independently, or rather with competent aid, to apply the facts of medicine which he has learned in the schools during his four years of medical study. A division of opinion exists as to whether this year should be obtained prior to issuing the medical degree or after the medical degree has been issued by the college and prior to the student entering the State examination. An effort has been made to develop the work of this year from both points of view, but it is almost inevitable that failure will attend that effort which goes in the direction of the intern year prior to graduation. Again State rights very materially enter into this subject. In a country like Germany, where paternalism obtains and hospitals are largely if not entirely under Government control, such a system is possible. In the United States, where few hospitals are owned by the State and few medical schools are State institutions, it would seem to be an almost impossible task. The University of Minnesota is making an effort to solve the problem in this way, but is having very considerable difficulty, and there is a prospect that they may fail, although the university is the only medical school in the State of Minnesota. Pennsylvania has adopted the policy of providing an internship after graduation but prior to the entrance to the State examination. The act of assembly amending the medical act of 1913 requires that:

Every candidate for admission to the Pennsylvania State medical examination shall have completed a year as intern in a hospital which shall have at least twenty-five beds to each intern, devoted to the treatment of medical, surgical, gynecological, and special diseases; shall maintain or establish cooperation with a maternity department or hospital in which each intern shall have not less than six weeks' service or the equivalent thereof, during which time he shall have attended or participated in the attendance upon not less than six confinements; shall maintain a thoroughly equipped modern pathological and clinical laboratory proportionate to the necessities of the hospital; the records on file of the cases treated in said hospitals shall give evidence of the laboratory work so done by the intern; shall maintain a department of anesthesia consisting of one or more anesthetists who shall have supervision over all the anesthesia given in the institution and whose duty it will be to instruct the intern in the administration of anesthetics.

Many difficulties have arisen in the enforcement of this provision of the medical act, and although the requirements went into effect the first day of January, 1914, the work is as yet uncompleted. On investigation of the hospitals of the State, both those owned by the State and those owned by private corporations, many were found not to measure up to the standard written into the law. Laboratories, anesthetic departments, and maternity departments were found wanting in a surprisingly large portion of the hospitals. On first investigation the bureau of medical education and licensure, which was made responsible for the administration of the act, was unable tentatively to approve more than a hundred out of about 200 institutions in the State. A year's trial of these institutions has developed many points of interest as well as of difficulty. It was found that there was a considerable reluctance by hospitals to raise and expend funds for the establishment of the laboratories and other required departments, in consequence of which a rider was attached to each hospital appropriation by the legislature of 1915 to the effect that laboratories and anesthetic departments must be established in the institution to which the appropriation was made, and the approval of these departments was placed in the hands of the bureau of medical education and licensure. With the original requirements in the amendment of 1913 and the requirements of the recent appropriation acts, the bureau of medical education and licensure has found the solution of the difficulties which presented themselves. It is now in process of inspecting all the hospitals, carefully going over with them the facilities they possess and indicating to them the necessary improvements

and additions. The readjustment to the new order of things is being rapidly made, and it may confidently be predicted that within the next year every hospital in Pennsylvania which shall stand approved by the medical authorities for internship will possess a proper and sufficient equipment and personnel with which to give the intern a proper fifth year of medical study.

With the completion of this movement there will be established in that State finally and definitely the ideal standard set in 1914 as the essential standard by the council on medical education, namely, a satisfactorily completed four years' high school course plus a year of college work of college grade in physics, chemistry, and biology and a modern language to be obtained prior to entrance on medical study; to be followed by the satisfactory completion of a graded four years' medical course in an approved medical school; this to be followed by a year's service as intern in an approved hospital. In addition to this, attention may be directed to the fact that already three of the seven schools of the State, following the example of other first-class schools of the country, are requiring a preliminary two years of college work instead of one such year.

As the preliminaries are the necessary basis of the medical curriculum, just so is the internship the basis of future practice. The graduated student passing from the medical school into the wards of the hospital begins in a measure for the first time to apply on his own responsibility the facts of medicine which he has previously gathered. These facts he now begins to learn to correlate, and without competent systematic correlation his facts will be of little use to him in the future. This year is or should be an actual year of instruction. It is not sufficient that the intern be allowed to practice on the patients in the wards, but all his methods and actions should be carefully overlooked and carefully guided and his mistakes pointed out to him and corrected. Without this, half or more of the value of the internship would be lost. Consequently the hospital which the intern enters should be an approved one. This inevitably leads to the necessity that medical authorities inspect and carry out supervision of hospitals. The necessity for this is unquestioned. The method of obtaining the power to accomplish the result is open to administrators to find. In Pennsylvania this has been accomplished, and the work of approving the hospitals for internship is well under way. The medical act specifically requires an internship, stating that it shall be in an approved hospital, and at the same time specifically stating certain departments which must exist. During the 1915 session of the legislature, the appropriation bills to hospitals required that several of these departments, including the pathologic departments, which in many institutions were woefully deficient and in some altogether absent, be established, and the funds were provided therefor. A tentative list of hospitals in the State has been established and approved for internship, largely on the reports from the hospitals themselves as to what advantages they offer. In the meantime the bureau of medical education and licensure has undertaken a thorough investigation of each individual hospital in order that it might satisfy itself as to the true situation as to the competency of the institution for the purposes proposed. All institutions found deficient are notified as to their deficiencies and advised as to how to go about rectifying them. As soon as the work of the bureau is completed, a new list of approved hospitals in Pennsylvania will be published, and thereafter no internship will be accepted excepting from these approved institutions. It will be seen, therefore, that Pennsylvania is a pioneer in the requirement of the internship and also is showing the way to effectively bring the hospitals into line for the purpose intended, namely, a competent course of a year of practical instruction for the medical student prior to allowing him to enter on the practice of medicine.

Hospitals vary as to the length of their internship, some having 12 months, some 18 months, and a few two years. The internes have their choice of any hospital on the approved list, but having once entered on the service of that institution, are held to the full term of internship, be it 12 months or be it 24 months, before he is admitted to the State examinations.

To assume that this internship simply means a year of education for the intern himself would show an exceedingly narrow view of the importance of the whole movement. The bureau of medical education and licensure, during the process of its inspections, has found to be a fact that which it had long since suspected, namely, that many men of the medical and surgical staffs of the institutions are incompetent to fill their positions, using the hospitals largely for their own private purposes and in no way attempting to give a competent return to the institution, to its patients, or to the public for the opportunities they themselves are receiving. The bureau has found laboratories existing in institutions of from 75 to 100 beds, which laboratory had existed for some years. On investigation it was found that there had been during the past year several hundred examinations, largely of urine and blood, made in these departments. The year following the agitation started by the State medical authorities demanding that the pathologic departments be properly equipped and properly run, the examinations in these departments were found to have increased to several thousands. The conclusions are inevitable that the men on the staff of these particular institutions had never, before being faced with the necessity to do so, made even a respectable effort toward fulfilling their duties to the hospital and its patients.

It is easy to foresee with our experience in Pennsylvania at this time that the sum total of the efforts of the State in this respect will be not only the education of the intern, but also a most potent factor in the education of the staff members themselves. These men, who were either too lazy or indifferent or ignorant in the past, will be, by publicity, spurred to the necessity of the use of the laboratories. The men with a desire and ability to use the laboratory will be given wider opportunities on account of the increased facilities and the competency of the laboratory work; one of the main features being demanded is a competent laboratory personnel. The sum total is bound to be the elevation of the whole tone of the service of the hospital and of every man connected with the service. It will also tend by comparison to improve the unfit, and will give boards of managers in the future opportunities to know who are unfit by observing the use they make of the laboratory.

Nor will the movement end at this point. As the men of the hospital staff use more and more freely the opportunities placed at their command, they will realize more and more the advantages modern medicine can offer from the diagnostic and prognostic standpoints. Through properly equipped and properly manned laboratories their patients will soon acquire a knowledge of the efficiency of such service and will demand it of other physicians practicing in the community. The practitioners in the community, having their patients going to the institution and seeing the exact methods the technician applies and realizing their value, will demand their use more and more thereafter. Those on the outside who are too slothful or too ignorant will be shortly marked as unfit by the community itself.

It will be seen, therefore, that through a properly organized system of control of hospital facilities, not only is the intern educated to such a point that there will be a minimum of unfit practitioners in the State in future, but the hospital staff is equally benefited, and the intelligence of the community itself will be educated to such a point that it will be able to distinguish the fit from the unfit. The benefits of the internship are limitless, and it is our belief in Pennsylvania that it is equally potent with the establishment of proper preliminaries in the bringing of the medical profession of this country out of the low state into which it has fallen.

If all this be true, then it would seem that it would take a powerful hand not only to get control of the reform but also to carry it out. Is it conceivable that any individual agency, such, for instance, as a medical school, can accomplish this as quickly and as effectively as can the State itself? We are strongly of the opinion from our experience that the State and not the college is the proper authority to take in hand the question of internship. The authority of the college is limited and can not spread equally wide and with equal potency as can that of the State.

It may be said, then, with truth, that the ideal standard as proposed by the council¹ on medical education of the American Medical Association has been reached in this country, and it is only a question of time until the whole country will have landed on the same platform. With a standard of preliminary education requiring four years' high school work and one year of college work, including the necessary basic sciences, a graded four-year medical course and a period of internship, can it longer be said that there is any other country which exceeds the United States in its efficiency in medical teaching?

The CHAIRMAN. It has been a very great privilege to listen to this paper by an authority on medical education, and by a man who has done so much to place the practice of medicine in the State of Pennsylvania upon a proper basis. Is there any discussion of this paper?

Mr. WAITE. I agree entirely with what Dr. Baldy says in regard to preliminary education. I am a strict constructionist myself, but I had some share in the leniency which is allowed on conditions. The reason for that leniency was found after inspecting medical schools and upon giving credentials to the man who has entered college the last year or two under the supposed one-year college requirement. We found that it had not been enforced. Furthermore, we could not hope to enforce it absolutely in certain parts of the country. Not more than three or four of the men proposed could actually meet the published requirements. It was apparent that progress had been too rapid, or rather that our education of educators had not been entirely in the right quarter. We had educated men in medical schools. They knew what was coming but the teachers in the undergraduate colleges did not know and had not been informed. Their curricula had not been adjusted to it, so it was impossible for a boy to get a full year's work. It seemed best, however, after going over the country and finding these conditions, especially in the South, to make an adjustment for a year or two which these schools could live up to, rather than to go on with the old statement on paper and wink at the various failures to comply with it; and it was on that basis, and that alone, that the leniency which was allowed in the circular published last spring was conceived. I think that everyone is agreed that beginning with 1917 the full requirements, the full standard of one year's studies, including a minimum in these various subjects, should be enforced, and I wish to say that if all the State boards would take the same position that the Pennsylvania State board has taken, it would be a very easy matter to do it immediately. I have very great admiration for what the Pennsylvania State board has done, and I think we are all very much indebted for having taken the State board educational viewpoint, while so many State boards have taken only the practitioner's viewpoint.

Mr. BARTSCH. I think we agree quite fully in having the desired requirements met, and it is due to the fact that the American Medical Association, or rather the Council on Medical Education of the Ameri-

can Medical Association, simply formulated the laws without inquiring or asking the cooperation of the universities in this matter. It seems to me that cooperation must come from the university and the medical schools. If there had been an invitation issued to the deans of colleges representing the various schools and universities to discuss that matter with the Council of Medical Education, it seems to me we could have arrived at some basic conclusion in a very short time; that is to say, the prescribed amount of wealth would not have been the basis of adjustment between two institutions, and as it stands to-day it is not an adjustment but a requirement. I think there is where the difficulty lies. I do not know but what even at this late day a movement of that sort might be indicated. I am extremely pleased to see what Pennsylvania is doing.

Mr. RIVAS. I perfectly agree that the States should regulate the entrance requirements to the medical schools in the United States, because by doing so we shall have uniformity in those entrance requirements. The preparation, which will be the same in all universities, will therefore simplify considerably the preliminary study in medicine. One of the greatest troubles is the diversity of requirements in the different universities, which means that some are up-to-date but others are not. To that extent, consequently, it is easy for unprepared and prospective students to get admission into universities where the requirements are not so high.

The CHAIRMAN. The next paper on "Medical education" is by Buckner Magill Randolph, M. D., professor of therapeutics, George Washington University, Washington, D. C.

CORRELATION OF THE PURELY SCIENTIFIC AND CLINICAL BRANCHES IN THE UNDERGRADUATE MEDICAL CURRICULUM.

By B. M. RANDOLPH,

Professor of Materia Medica and Therapeutics, Medical Department of George Washington University, Washington, D. C.

Shortly after beginning the practice of medicine the writer was asked by an old countryman this question, "Are you a practice doctor or a theory doctor?" We need hardly add that his preference was for what he termed a "practice doctor," and he recited numerous observations to support his choice.

We smile at the crudeness of my old acquaintance, but it requires only a little reflection to realize that his crudeness lay rather in his method of expression than in the idea expressed. The majority of laymen and not a few physicians seem possessed by the conviction that there is an irreconcilable hostility between the theorist and the practical man, and each must avoid the contagion of the other. It is only the occasional one, who thinks below the surface, that is able to realize the inevitable duality that involves everything in human experience, who sees that there are always two qualities which seem to conflict, which, when allowed to run unchecked do con-

flict, but which are designed under proper discipline, and with mutual yielding and restraint, to fulfill harmoniously their common purpose.

It is my belief that a very serious obstacle to the progress of medical science and practice lies in a lack of harmony, an atmosphere of hostility between theory and practice. It is so obvious in theory that harmony between these two is essential that any statement to that effect may seem insulting to the intelligent listener. But if we examine into actual conditions, as we come into contact with them in our daily work and intercourse, it would seem that a reiteration of this obvious platitude is not only appropriate but necessary, at least in regard to medicine.

The diplomas with which we are accustomed to adorn the walls of our offices when we begin our careers—instruments couched in more or less bad Latin—proclaim that we are *doctissimus*, or *præclarissimus*, or otherwise flatteringly equipped in the *art* and *science* of medicine. These ancient formulæ show that the conception has prevailed for centuries that medicine is not an art, not a science, but both an art and science working together harmoniously for a common purpose. Just as surveying is the science geometry applied to the mensuration of the surface of the earth, so is medicine the application of the pure sciences of physics, chemistry, and biology to the field of the human organism. The mathematician can not sit in his study and construct a map of the farmer's land that will protect the latter's title; nor can the lout that bears the rod and chain read the sextant and compute its findings with logarithmic tables. In addition to his theoretical knowledge and ability to use instruments of precision, the surveyor must have stout legs and endurance; must be at home in forest, field, thicket, and marsh; must be able to use unskilled help, and know enough of human nature to interpret his technical findings in terms intelligible to his client. The applied science of medicine is just so much more complicated than surveying as the combined sciences of physics, chemistry, and biology are more complicated than geometry; as much more intricate as the human organism is more intricate than the gross characters of the land's surface. So many are the intricacies, and so numerous the mass of facts bearing on the application of science to the prevention and cure of human maladies, that it is impossible for a single individual to master both the scientific basis and the detailed application of all. This has naturally and properly led to the development of specialists; but it has also led many to be satisfied with a very superficial knowledge of a limited field, and to ignoring the basic scientific principles on which even a limited specialty must rest.

Granted that a large number of the men who leave our medical schools will specialize in some line, either of clinical or laboratory work, it will always be true that the larger number will become general practitioners. It is for the training of these as scientific men that the standards of the medical curriculum should be adjusted. Those that are to become specialists will waste no time nor be any the worse off for a thorough grounding in the whole subject. The plan of electives is not for the undergraduate.

In our daily intercourse with the members of our profession we can not fail to be aware of the atmosphere of mutual hostility that prevails between the laboratory worker and the practitioner. The practitioner is both resentful and skeptical toward the attitude of superiority assumed by the man who rarely sees a clinical case, and the latter is prone to belittle the judgment and ignore the observation of the practitioner. The effect is that the practitioner drifts more and more away from science toward empiricism, and the scientist tends to become more and more narrow, as he is shut off from the control that is afforded by contact with clinical phenomena. The mutual exchange of ideas which would make each a better man in his own field is too often lacking. The clinician suffers in that he is not sufficiently familiar with the resources offered by the laboratory for his assistance, nor is he able to interpret properly the laboratory findings when he has obtained them. On the other hand, the laboratory man is cut off from clinical contact with disease, fails to get a proper perspective

of the phenomena presented, and is deprived of invaluable stimulus to his imagination, and of guidance toward intelligent research.

I can not pass without a word on the subject of research. Research is essential for the progress of science and its application. All praise to the men who, with talent, training, and zeal for the truth, are by this means advancing the art and science of medicine. But apart from genuine research, the word itself has been so exalted that its meaning has been sadly cheapened. Following the German lead, we in North America have bowed down and worshipped "research," and anything that assumes to call itself by this name is given unbounded credit. The man who has published something termed an original investigation is hearkened to with a kind of awe, even though he rivals in dialectics and far-fetched inferences the medieval school men, who debated how many angels could stand on the point of a needle. A teacher may have surpassing talent for imparting to his students the subject which he teaches, may serve them as a life-long inspiration to high standards of work and conduct, but if he has not condescended to advertise himself by publishing some effort that may pass as "research," he is frowned upon by those who have constituted themselves censors of medical standards. I believe that I am not greatly in error when I make the statement that more than three-fourths of the material that clogs the pages of our medical literature under the label of research is of no value whatever.

I should state the essential conditions for genuine and valuable research as follows:

1. A sincere and fundamental devotion to truth.
2. A question that requires an answer.
3. A knowledge of what is already known on the subject.
4. Absence or complete surrender of preconceived theories on the subject.
5. A training in technique which can avoid error.

6. A ripe judgment, which will stop at the fact ascertained and not undertake to add a top-heavy superstructure of inference and speculation. The fault I have to find with much so-called research seems to lie in the following:

1. The motive. Research makes one great. I would be great. Therefore I shall indulge in research.

2. Prejudgment. Too much is undertaken for the purpose of establishing a preconceived theory. In this state of mind, phenomena that do not serve or that conflict with the purpose in view are overlooked or ignored.

3. Ignorance. If many investigators would find out what is already known on a subject their researches would not be undertaken.

4. Incompetency. Like the singer who wishes to take the rôle of Brunhilde as soon as she is told that she has a voice, so many plunge into original investigation without the long and tedious training required to fit them for it.

The putting of the undergraduate student upon serious research is the utmost folly. Even if, perchance, he should light upon something of importance, it is more than likely to spoil him for the rest of his career.

What has all this to do with the undergraduate curriculum? I have endeavored, by pointing out the shortcomings of our profession, to indicate a standard which is to be held before the student of medicine, by the observance of which he may shun these shortcomings. This standard is a practitioner who is thoroughly grounded in the basic sciences upon which his life's work rests; one who will do nothing, think nothing, say nothing, without knowing, or seeking to know, the scientific principles upon which are founded his actions, thoughts, words; who will serve science (which is truth) with humility and without fear, realizing that by this service he is best serving the interests of those by whom he is employed; who will understand the language of science, so that he may commune with his fellows by word and in print; who will not fear to say "I do not know."

The task imposed upon the student of medicine is arduous, as must of necessity be the case. But I have yet to see an earnest student who will complain of hard work,

provided he feels that he is getting a return for the effort expended. The difficulties with which he has to contend are undoubtedly made greater than they need be by the failure of coordination of the various subjects; that is, by bad teaching. He may be taught anatomy as one subject, and physiology as something remotely, if at all, related to it. We would hardly detach in our minds the mechanical structure of an automobile from the same machine running along the road, but too often the relation between anatomy and physiology is left to the intuition of the student.

Having "gotten off" chemistry, he now engages with that bane of the medical student, *materia medica*. Instead of being made to realize that he is dealing with substances of definite chemical structure and physical characters, whose effects upon the human organism are purely physical and chemical reactions subject to biological law, he is stuffed with endless repetitions, a mixture of facts derived partly from experiment, partly from testimony, along with folklore, mythology, and endless speculation; classifications botanical, which are useless; classifications therapeutic, which are erroneous; classifications alphabetical, which at least have the virtue of easy reference.

Practice is presented as a list of names of diseases, for each of which he is requested to memorize a group of symptoms. How many physicians look upon their patients from the point of view of the pathological variations presented? Do not most of us, after studying enough objective and subjective phenomena to enable us to affix a label to the malady under consideration, stop short without visualizing the actual morbid changes in tissue and function? Frequently have my former students, after beginning practice, said to me that this or that case was very different from the typical textbook case of such and such a disease. Of course. If one should accurately describe the Johnstown flood as an example of the activity of water seeking its own level, we should not expect every broken dam to give identically the same picture. One man who has eaten a bad oyster will vomit immediately, another will have diarrhea the next day, a third will not be disturbed at all.

Therapeutics is perhaps the most illogical of all. Look upon the massive tomes in countless number telling us how to treat disease. Given a knowledge of anatomy and physiology, combined with pathology, both structural and functional, and a knowledge of the nature of the substances and procedures by which we can modify function and structure, the proper therapeutic procedure follows with inexorable logic. Treatment by rule of thumb is on the same basis as the housewife's remedies, and in the hands of physicians is apt to be no more beneficial and much more injurious. Out of my own professional experience I can say with utmost sincerity that when I have sought in vain for adequate help in various textbooks on therapeutics, I have turned with success to books on physiology and chemistry.

What wonder, then, that the student is vexed; that he burns the midnight oil in the futile endeavor to memorize absolutely what he has sought in vain to arrange in his mind by logical process.

The remedy would seem to lie in realizing the fact that our clinicians are not good enough pathologists; that our laboratory men are not good enough clinicians. Each one should be able to speak to the student in the language of the other; should read and understand the literature of the other; should come freely into contact with each other in the study of cases and laboratory procedures, and in the joint discussion of medical topics. The influence of such a condition upon the student would be admirable. Instead of being led to believe that a thorough understanding of all matters concerning his profession is impossible, and that he is to be satisfied with a certain minimum, he will get the impression that the true physician can be en rapport with what is going on in all directions, even if he does have to say, "I don't know," with reference to technical details.

The medical student enters upon his studies with very vague notions of what he is undertaking, and with no ideals with regard to his profession that will stay by him,

unless it be that of making money. Because he is human he needs an ideal, and looks about him to find it. He is apt to seek it in the personality of his teachers, and the result will be the selection of an individual, or a composite character, the former or the latter, according as enthusiasm or judgment prevails in his constitution. He will speedily adopt the prejudices and antipathies of his prototype, as well as the virtues. He may learn from the laboratory man to sneer at the ignorance of the practitioner in scientific matters, or from the practitioner that the services of the laboratory are of problematic value to the sick.

I believe that when active and effective coordination in teaching takes the place of the attitude too often assumed by the teacher that his subject is a thing apart, and the only one of importance; when all of our teachers, clinical and otherwise, are able to speak to the student freely in terms of natural science; that when our laboratory men through more frequent clinical contact with disease are able to impress better upon the student the practical value of laboratory procedures, that so much the better will medical schools fulfill their function by supplying to their communities better practitioners, because devotees of science; better scientists, because practical men.

The CHAIRMAN. It has been a great pleasure to hear this excellent paper by a man who combines both science and art in the practice of his profession and in his teaching. Is there any discussion on this paper?

Mr. BARTSCH. I wish some one might indicate ways and means of conveying to students of medical schools the interrelationship of all the various subjects. The great difficulty which I have found in teaching medical students is to get them away from the feeling that histology is histology. It is very difficult to get them to see the relationship which it bears to anatomy or to see the relationship of all these subjects. It is difficult to get them to see in physiology the same problems that confront them in anatomy or histology. The student seems to have an idea that these are unrelated subjects. Now if some one will indicate how it is possible to feel the beautiful interrelationship which exists, how one subject is dependent upon another, and how the man who knows his histology could not make a mistake in physiology—if an outlined scheme or some method could be evolved whereby the students could see the whole rather than the part—I should indeed be very happy.

The CHAIRMAN. If there is no further discussion the session will stand adjourned.

JOINT SESSION OF SUBSECTIONS 8 AND 9 OF SECTION IV.

GEORGE WASHINGTON UNIVERSITY,
Wednesday morning, December 29, 1915.

Chairman, W. T. BAWDEN.

The session was called to order at 10.05 o'clock by the chairman.

Papers presented:

Education for the baccalaureate degree as administered in agricultural colleges, by Alfred Charles True.

Training of girls and women for trades and industries, by Mary Schenck Woolman.

EDUCATION FOR THE BACCALAUREATE DEGREE AS ADMINISTERED IN AGRICULTURAL COLLEGES.

By A. C. TRUE,

Director of States Relations Service, United States Department of Agriculture, and Dean of the Graduate School of Agriculture of the Association of American Agricultural Colleges and Experiment Stations.

In the United States the term "agricultural college" is used with two general significations: First, it may designate any one of the State colleges or universities endowed by the Federal Government under the land-grant act of 1862 and supplementary legislation. These institutions are, as a rule, highly complex in their organization, having a number of divisions or colleges for instruction in subjects other than agriculture, as for example, engineering, liberal arts, medicine, law, etc. Thus the University of Illinois may be loosely designated as the Illinois Agricultural College. The Iowa State College of Agriculture and Mechanic Arts or the Kansas State Agricultural College may be similarly designated, and this is sometimes done by persons who do not realize how complex is the organization and work of these institutions. Secondly, in a stricter sense, we use this term to designate that branch of a collegiate institution in which agriculture is taught—e. g., the college of agriculture of the University of Wisconsin or the agricultural division of the Alabama Polytechnic Institute. In this paper the term will be used in its stricter sense.

By a college course in agriculture we usually mean a four years' course leading to a bachelor's degree and including instruction in various branches of agriculture, combined with natural sciences, mathematics, languages, history, economics, and other subjects.

Agriculture as a general subject of instruction includes plant production (subdivided into agronomy [field crops], horticulture, and forestry), animal production (including both zootechny and veterinary medicine), agrotechny (including dairying, sugar making, etc.), rural engineering, and rural economics and sociology. Besides

courses covering these subjects in a general way there may be courses or separate schools for special instruction in horticulture, forestry, veterinary medicine, etc.

Most of our agricultural colleges are State institutions, subsidized by the Federal Government, but the number of private colleges in which some agriculture is taught is increasing. In 1914 the Federal funds constituted only about 10 per cent of the total income of the State colleges.

Besides the regular college courses many of our agricultural colleges give short courses in agriculture and some have secondary schools of agriculture connected with them. Most of these colleges are giving some graduate instruction in agricultural subjects, often leading to a master's degree, and a few of them have regularly organized graduate courses leading to the degree of doctor of philosophy.

This paper will deal exclusively with the courses of instruction in agriculture which lead to the bachelor's degree. These courses cover four years of college work. About 15,000 students were enrolled in such courses in 1914. The requirements for admission vary in the different States. There has been in recent years a steady movement in the direction of increasing these requirements until they reach the level of the requirements set by our first-class colleges for entrance to other courses leading to the bachelor's degree, and in a considerable number of States this standard has already been reached. Subjects generally included in the entrance requirements are English language and literature, mathematics (arithmetic, algebra, and geometry), one or more natural sciences (chemistry, physics, botany, zoology, etc.), and history. Credit may also be given for ancient and modern languages or for agricultural studies pursued in the preparatory school.

The college courses in agriculture leading to the bachelor's degree vary considerably in the different States as regards the variety of subjects, the number of required and elective subjects, the order in which the subjects are arranged, and the amount of instruction given under each subject. In a general way there is a relatively large amount of required work in the first two years, while in the third and fourth years there is a constantly widening number of electives as the resources and faculties of the agricultural colleges are broadened. In recent years there is, however, a distinct tendency to limit the choice of the student throughout his course to certain groups of subjects arranged with reference to ultimate specialization in some branch of agriculture or agricultural science.

A study of the bachelor-degree courses in our agricultural colleges made by the committee on instruction in agriculture of the Association of American Agricultural Colleges and Experiment Stations in 1911 brought out the following general facts:

An examination of the recent catalogues of the agricultural colleges shows that there is a relatively large amount of required studies in the first two years of the course, but that a considerable number of institutions have some required studies in the third and fourth years. The list of studies required at some time in the course by one or more of the agricultural colleges includes about 40 subjects. There are also a large number of elective courses. These are principally found in the third and fourth years, but a considerable number of institutions offer some electives in the first and second years. There are a certain number of subjects which are quite generally included among the required or elective studies. These subjects and the number of colleges in which they are taught are shown in the following table:

Studies given in a considerable number of agricultural colleges.¹

Subjects.	First year.	Second year.	Third year.	Fourth year.
Required:				
English.....	38	22	.....	.....
German.....	16	15	.....	.....
Mathematics.....	30	.....	.....	.....

The figures in this table indicate the number of colleges in which the subjects are taught.

Studies given in a considerable number of agricultural colleges—Continued.

Subjects.	First year.	Second year.	Third year.	Fourth year.
Required—Continued.				
Physics.....		18		
Chemistry.....	24	36	16	
Botany.....	23	22		
Zoology.....		17		
Drawing.....	16			
Military.....	27	26		
Agronomy.....	21	31	21	
Animal husbandry.....	22	24	18	
Horticulture.....		26		
Elective:				
Economics.....				9
Chemistry.....			11	8
Botany.....			8	9
Agronomy.....			14	16

It may therefore be said that there is more or less general agreement among the agricultural colleges that the subjects (about a dozen) named in the above table should be included in a college course in agriculture, and that most of them should be required studies in the first and second years. Outside of these subjects there is apparently great variety of opinion among these colleges as to the make-up of courses.

As a basis for discussion of the grouping of studies in agricultural college courses, the following groups are suggested: (1) Languages; (2) mathematics and sciences; (3) history, economics, and psychology; (4) agriculture; and (5) drawing, military, and gymnastics. Several courses grouped in this way are shown in the following table:

Grouping of studies in college courses.

(The figures in the table indicate semester credits.)¹

Subjects.	Iowa (agronomy). ²	Wisconsin (agriculture).	Committee (agriculture).
Group 1:			
English.....	8	6	10
Modern language.....	0	8	12
Total.....	8	14	22
Group 2:			
Mathematics.....	3	3	5
Physics.....	3	10	6
Geology.....	0	0	3
Chemistry.....	14	19	14
Astronomy.....	0	0	0
Botany.....	8	6	10
Bacteriology.....	4	7	
Physiology.....	0	0	10
Zoology.....	9	0	0
Entomology.....	0	5	0
Biology.....	0	10	0
Minor study.....	0		
Total.....	41	60	48
Group 3:			
History.....	2	0	8
Economics.....	3	0	0
Business law.....	0	0	0
Psychology.....	0	0	3
Ethics.....	0	0	1
Total.....	5	0	12
Total in groups 1, 2, and 3.....	54	74	82

¹ The figures in the table indicate the number of hours of instruction per week during the two half years (semesters) into which the college year of about 36 weeks is commonly divided; i. e., 10 indicates that the study covers a period equivalent to five hours a week for two semesters.

² In the Iowa College the group method of arranging courses is followed. There is no general course in agriculture, but separate courses in agronomy, animal husbandry, etc., with special reference to specialization in one of these subjects. For the table the course in agronomy has been selected.

Grouping of studies in college courses—Continued.

Subjects.	Iowa (agron- omy).	Wiscon- sin (agri- culture).	Commit- tee (agri- culture).
Group 4:			
Agronomy.....		2½	8
Soils.....	13	5	0
Farm crops.....	22½	0	0
Animal husbandry.....	14½	5	8
Horticulture.....	11	2½	
Forestry.....	0	0	3
Dairying.....	24	2½	2
Agricultural engineering.....	8½	2½	5
Agricultural economics.....	0	5	5
Veterinary.....	1	5	2
Major study.....	0	10	8
Electives in agriculture.....	0	12	8
Total.....	74½	47	50
Total required.....	128½	121	132
Electives.....	10½	12	00
Total.....	138½	133	132
Group 5:			
Military.....	8	8	8
Gymnastics.....	0	8	
Drawing.....	0	0	2
Library.....	2	0	0
Total.....	10	16	10
Grand total.....	148½	149	142

In a general way the agricultural colleges may be divided into two classes, according to the amount of strictly agricultural studies which are required of students graduating in agricultural courses. These two classes of institutions and the way in which their courses work out when arranged in accordance with the aforesaid groups may be illustrated by the agricultural courses at the University of Wisconsin and the Iowa State College.

Arranged on a similar plan, the course in agriculture outlined by this committee, as stated above, has been included in the table, with modifications permitting specialization through a major study and some electives in agriculture.

Further theoretical studies in pedagogy, as well as the practical experience of many institutions, indicate that some of the more elementary subjects in agriculture should be taught in the freshman year. * * * The increased requirements for entrance to college also make this more feasible. Such a change in the college course tends to secure more students for the agricultural courses, shows them early in their course the importance and interest in agricultural studies, and starts them out in a path which they will be more likely to follow to the end of the college course.

For many years the agricultural subjects taught in our agricultural colleges were chiefly those which related to the production of plants and animals, together with dairying. Recently an increasing amount and variety of instruction are given in subjects coming under the head of rural engineering, including drainage, irrigation, road making, farm buildings, and farm machinery. In the ordinary bachelor-degree course only enough of these subjects is included to enable the student to understand their relation to agricultural production and to perform the more elementary practices of rural engineering required on the farm. In some institutions, however, more or less specialized courses in one or more of these subjects are offered.

There is now great interest in rural economics, including farm management, and sociology. Separate chairs for these subjects are already established in a considerable number of the agricultural colleges and some instruction along these lines is generally given in bachelor-degree courses in agriculture. The subject of farm management is being actively studied and a system for analyzing the business of the farm to determine what are the sources of profit and loss in the actual operation of farms has been

worked out by the Department of Agriculture and is being extensively used in the colleges. While it is generally agreed that farm management should be organized and taught as a separate subject there is still variety of opinion whether it should be considered as a branch of rural economics. The committee on instruction in agriculture also studied this subject in 1911 and reported its conclusions as follows:

The subject taught or investigated under the head of farm management, as related to the organization and management of individual estates devoted to agriculture, in the judgment of this committee necessarily involves the application of the principles of economics. These principles constitute the scientific basis of farm management and give this subject its only just claim for consideration as having a pedagogical value entitling it to a place in courses of study or a scientific standing as related to problems of investigation.

It is true that the farm manager should take into account what is taught under agronomy, animal husbandry, agrotechny, and rural engineering, but he is chiefly and essentially concerned with the application of economic principles to the conduct of his business. Outside of economics there is nothing which can give his business a sound scientific basis. The mere collection of the details of methods of conducting different farms will not suffice. There must be the reference of these matters to some underlying principles. When this is done, it is clear that farm management comes within the domain of economics, because the purpose of farming is to secure a profit from the use of the land and its equipment. If profit is lost sight of, the farm manager, though trained in all branches of farm practice, is doomed to failure. * * *

It seems desirable to use the term "rural economics" as applicable to the general field of economics in its relation to agricultural and rural communities. The term "farm management" may properly be restricted to that phase of rural economics which deals with the business organization and direction of individual farm enterprises, or, in other words, deals with the farm as a unit. * * *

But besides the more general courses in rural economics there will undoubtedly be an increasing number of courses treating of various subdivisions of this subject, in addition to farm management. Such, for example, would be courses in farm accounting, cooperation and credit, farm labor, markets and marketing, taxation, etc.

There is another group of rural problems which is quite clearly differentiated from rural economics and forms a branch of social science or sociology, to which the name of rural sociology may be appropriately applied. Rural law and legislation, history of agriculture, and comparative agriculture are also subjects more or less distinct and separate. For the present, however, it may be desirable to put such subjects in some other department in order that some attention may be given them in the scheme of college courses in agriculture. As the resources of the agricultural colleges increase and trained specialists along these lines are available, separate chairs should be established to represent these important subjects.

Your committee is deeply impressed with the importance of developing strong courses in rural economics and sociology and the other subjects just referred to. These all involve the human element in agriculture and country life. They tend to raise the college courses in agriculture above the materialistic plane, to emphasize broadly the human interest that properly inheres in agricultural studies, and thus to inspire both faculties and students in our agricultural colleges with a higher sense of the wide responsibilities attaching to leadership in agricultural affairs. Pedagogically they serve to show that agriculture when broadly treated is to be enrolled among the humanities, as well as the sciences, and ethically they point out the vital connection between agricultural science and the welfare of rural people and even of all mankind.

In their earlier years our agricultural colleges, not having much scientific knowledge directly relating to agriculture, laid much emphasis on the teaching of agricultural practice and insisted that the students should engage regularly in labor on the college farm. The systems of student labor then devised soon became exceedingly irksome to the students, and, not having in them much educational value, were abandoned. Then followed a period when the teaching of agriculture itself declined in relative importance in these colleges and its place was largely occupied by the natural sciences, which were so taught as to bring out their growing relations to agriculture. Later on agriculture was increasingly organized as a science and specialization in its different branches made much headway. Thus the theory of agriculture came to hold a leading place in the undergraduate curriculum. But recently a demand has arisen that our agricultural colleges shall give more attention to making

their graduates competent practitioners of agriculture. This demand has come from different sources. Educators are coming to believe that practice in an art has a certain educational value in itself and that in vocational studies the actual and concrete should be closely associated with the theoretical. In agriculture the field and the stable should take the place of the workshop in other industries or the laboratory in chemistry or physics. Again, large numbers of students are coming to our agricultural colleges from the cities, and they must have agricultural practice to enable them to understand agricultural science or to fit them to engage in farming. Moreover, there is a large and growing demand for graduates of agricultural colleges to fill positions as teachers in secondary schools or as extension workers among the farmers. These men must be efficient farm practitioners if they are to have any large measure of success in such positions. There is also a growing demand for college graduates as farm superintendents, and the colleges of course can not recommend their graduates for such positions unless they have definite assurance that these men know how to operate farms.

The colleges are therefore giving much attention to devising plans for securing definite farm practice as a part of the requirements for graduation in agriculture. In 1913 and 1914 the committee on instruction in agriculture made a study of farm practice as conducted or arranged for by our agricultural colleges. The results of this study are included in the proceedings of the Association of American Agricultural Colleges and Experiment Stations for those years.

As a result of its study the committee finds that the colleges recognize three more or less distinct types of farm practice, viz:

1. Practice or experience in the fundamental operations of the farm.
2. Practice in the handicraft of operations which constitute an essential part of the college course in agriculture.
3. Practice in the business of farming, i. e., farm management.

TYPES OF FARM PRACTICE.

1. Practice in the fundamental operations of the farm should lead to a working knowledge of such things as harnessing horses, milking cows by hand, plowing, planting, harvesting, and other operations which every farm-reared boy learns. So far as the agricultural colleges are concerned, a knowledge of these operations should constitute a prerequisite to entrance. * * *

2. Practice in the handicraft of operations which constitute an essential part of the college course in agriculture includes such exercises as running gasoline engines, spray rigs, cream separators, and incubators, preparing poultry for shipment, grading and packing fruit or eggs, judging animals or crops, laying out drainage systems, grafting and pruning fruit trees, testing cows, and the like. Such practice is quite generally insisted upon primarily for the purpose of illustrating and enforcing the theoretical instruction in agriculture, rather than for the purpose of imparting manual dexterity. It includes two fairly distinct phases—(a) Practice in course—laboratory, barn, and field work, which is ordinarily distributed throughout the several semesters, but in some cases is combined in one semester, or longer period, devoted primarily to practice; and (b) vacation practice on specialized farms or in commercial plants devoted to dairying, fruit growing, poultry raising, or some other special phase of agriculture, and on observation trips to highly specialized farms, truck or fruit regions, fairs and expositions, agricultural engineering projects, and the like.

3. Practice in the business of farming, or farm management, in which the students, either as graduates or as undergraduates, undertake the management of a farm while still under the guidance of the college authorities, or are employed as student apprentices by competent farmers selected by the college, and in either case receive college credit upon the satisfactory completion of their work.

As regards the "Practice or experience in the fundamental operations of the farm which every student of agriculture should have" the committee found—

That farm experience is an important factor in the progress of the agricultural student through college, as well as in his probable success in a future agricultural vocation, is now quite generally believed by his instructors. Even those in charge of

courses in plant breeding, plant pathology, economic entomology, and other like applied sciences are inclined to urge upon their students the importance of living for a time the life of a farmer, in order that they may see his point of view and better appreciate his problems. But how the college can best aid students coming from other occupations to acquire the necessary minimum knowledge of farm practice is still an unsolved problem.

However, the committee reached the following general conclusions:

Every student enrolling in the four-year agricultural course should be given some sort of examination to determine the extent of his knowledge of farm operations.

If it is unwise or impracticable at present to exclude such students as fail in this examination until they shall have gained farm experience, the colleges must eventually assume the responsibility of providing means for giving them such experience, either on farms owned by the colleges or on private farms.

Farm practice of a general nature should be acquired early in the college course in order to prepare the students for practice in special branches of agriculture in the later years.

It will doubtless be impracticable for the agricultural colleges to provide any considerable number of students with training in the manual arts of the farm by employing them on the college or station farms.

Colleges having a number of demonstration farms may be able to train a few students in farm practice on these and the college farms. But neither college farms nor demonstration farms are operated under normal conditions. It will be better, therefore, for the colleges to send inexperienced students to selected private farms for practical experience.

Great care should be exercised in the selection of these farms. As near as possible they should meet the following conditions:

1. They should be relatively small general farms in order that the students may get a variety of work and experience.

2. They should be well equipped and well managed.

3. They should be in charge of men who are friendly to students, capable and willing to teach them, and possessed of good judgment as to the wages earned by the students.

The colleges should neither encourage nor permit inexperienced students whom they place on farms to hire out at high wages. Disappointment and dissatisfaction are almost sure to result from such an arrangement. It would be better for each student to hire out for board, work clothes, and whatever else the farmer thinks his services are worth.

Each student should be required to bring from his employer a certificate of merit as a farm laborer before being credited with passing his farm-practice condition. He should also make a report on his own observations and experiences and on the business management of the farm on which he has worked. Forms for the certificate of merit and for the student reports should be furnished by the college.

For farm-reared students and advanced students specializing in some branch of agriculture, lists should be made of dairy farmers, stock farmers, fruit farmers, truck farmers, poultry farmers, and the like, who are willing to employ advanced students and capable of instructing them. Students working on these farms should likewise be required to bring back certificates of merit and personal reports.

The practice now followed in many institutions of arranging for groups of students to supplement their practical experience by visiting successfully managed farms is to be highly commended. Farm observation trips can be made of great value not only to students who have begun to specialize but also to those in the more general courses in agriculture.

All farms to which students are sent for training or observation should be open at all times to visitation and inspection by members of the agricultural faculty, and in return their owners or managers should receive from the colleges special consideration in the way of advice and assistance.

The committee found that the practice work provided for in American agricultural colleges as a part of the college course, in addition to the requirements of a general knowledge of fundamental farm practices—

is quite generally insisted upon as a feature of the instruction in every branch of agriculture, but it has by no means reached its optimum development. In connection with some courses there is too little practice; with others, too much. In the main there is a feeling that there is too little practice for effective teaching.

Relatively speaking, more attention to practice is given in the newer courses in agriculture, like horticulture, poultry husbandry, and rural engineering, and less in the older subjects of agronomy and animal husbandry.

The practice work is quite generally given in connection with related lecture courses in agriculture and is thus distributed over the four-year course, but some institutions make definite provision for vacation practice, or arrange for the employment of students on approved farms for a year or more, or place students in charge of farm practice projects for definite stated periods—all for the purpose of giving them practice in farming. Educational excursions may also be included among practice projects.

Among the difficulties which have hindered the satisfactory development of practice work in connection with agricultural courses may be mentioned—(1) large class sections due to the rapid increase in the number of agricultural students, the relatively small teaching force, and the lack of duplicate equipment for the use of individual students, and (2) inadequate funds to employ additional instructors and to purchase land, apparatus, animals, and other facilities for instructional purposes.

To remedy these conditions it is desirable, of course, to secure more liberal funds, more land, more-laboratory space and additional equipment, but in the meantime much can be done to improve the practice work by giving serious attention to securing the highest possible efficiency of the present teaching force and equipment. * * * It is believed that with better organization of the teaching force and more definite planning of the work of teachers and students, much time can be saved and more effective practicums can be developed, and that with some planning for the more constant use of equipment more students can be accommodated in the practicums. But no very marked advance can be made in this direction without the sympathetic and intelligent cooperation of an alert, well-trained teaching force—a teaching force whose members, individually and collectively, believe in dignifying farm practice with a definite and important place in the education of young men for agricultural pursuits.

There are now in the United States about 2,000 secondary schools in which agriculture is taught; 1,200 counties have agricultural extension agents; and there are at least 1,000 teachers of agricultural subjects in our colleges. All these positions and the greater number which will be open within a few years should be filled by men who have had professional training in education as well as agriculture. The agricultural colleges are therefore feeling an increasing obligation to give special training to students fitting themselves to become teachers or extension workers. Sixteen colleges have already established chairs of agricultural education and have offered special courses in psychology and pedagogy which may be taken as electives in the bachelor-degree course. A few colleges are now offering courses arranged with special reference to the needs of extension workers.

The committee on instruction in agriculture made this the subject of its study this year and its report will be published in the proceedings of the association for 1915. In the judgment of the committee the courses for extension workers should include undergraduate work in physics, chemistry, botany, and zoology, with special reference to their agricultural applications, and in the fundamental principles of agriculture. In addition, "adequate provision should be made for work in rural social and economic science, in professional courses for the teacher and the extension worker, and in public speaking and other forms of self-expression." After receiving the bachelor's degree candidates for positions as extension workers should have at least two years of graduate study and practice, and one of these years should be spent in farm work and extension practice away from the college.

Mrs. MARY S. WOOLMAN. I would like to inquire of Dr. True how young the people are who are receiving training through the Federal aid bill that has been considered in connection with the Smith-Lever bill—whether the age was not about the same? The question is whether it does reach the youth of 13 or 14 or 15 years as well as the agricultural college extension student of 19 or 20 years.

Mr. TRUE. The Smith-Lever Act has been interpreted to include the children on the farms as well as the adults. It begins with 10 years—from 10 to 18 years of age are included.

Mrs. WOOLMAN. I suppose that the Smith-Hughes bill was intended to provide for instruction in schools—that is, in the country schools?

Mr. TRUE. Yes; I think so. Of course, that has not come under any real discussion. What will come out of the Smith-Hughes bill we do not know. In a general way it was intended for secondary work and some continuation work in the elementary courses, which I think would include such people as you are interested in.

Mrs. WOOLMAN. Exactly; I was just wondering if that were the case. Of course, we touch in a small way towns as well as agricultural communities.

Mr. TRUE. Well, it is quite a broad measure.

THE TRAINING OF GIRLS AND WOMEN FOR TRADES AND INDUSTRIES.

By Mrs. MARY SCHENCK WOOLMAN,

Chairman Committee of Women's Work, National Society for the Promotion of Industrial Education.

A. Concerning the advisability of training girls and women for industry:

1. In the United States Census of 1910 we find the following data of women engaged in various occupations:¹ Agricultural pursuits, 1,087,060; professional service, 673,418; domestic and personal, 2,620,857; trade and transportation, 1,202,352; manufacturing and mechanical pursuits, 1,772,095. Each recurring census shows a greater number of women in wage-earning occupations. In 1890 there were 4,005,532; in 1900 there were 5,319,397; and in the last one (1910) we find 8,075,772.

2. The United States is an increasingly important, industrial Nation. Success depends largely on her working people. Important industries require the skill and deft handling of women, but up to this time the great body of them is untrained, hence a large factor in national prosperity is lacking. Neither the public schools nor systems of apprenticeship are meeting the need for training them for vocation. Therefore the majority of girls and women are employed in unskilled occupations, and some means must be provided by which they can obtain better pay in less deadening jobs.

3. European nations long ago trained their girls for their leading industries in well-organized courses of three to five years in length. We can gain much by a survey of this work, but must bear in mind that the rank and file can not give so much time even for free instruction. The United States has made progress, also, in giving practical education in the practical arts high schools, but a very small number of the girls who must work ever reach the high school. The problem at the present time, therefore, is the training of girls who are already employed and must be educated while they work, and those who have not yet become wage earners and can give but a few months or a year to preparation.

4. Large numbers of men can not earn enough to support their families, consequently their sons and daughters must assist as soon as they are free to get their working papers, which is 14 years of age in most States. Frequently the elementary school has

¹ United States Census, 1910, vol. 4—Occupations, p. 41

not been completed, as parents and children are indifferent to the education found there. Many leave for work even when the need for their wage is not great.

5. A heavy burden is laid on young girls and older women, for mothers of families are also in the workrooms. To safeguard the future of the country we must protect them, and if they must be breadwinners see to it that the conditions are the best that can be obtained. Training of an adequate kind will not only enable them to make a living wage, but will give each a chance to rise to more responsible positions. If for one day the girls and women did not go to their usual positions in workrooms and offices the business world would be handicapped, so thoroughly have their services been interwoven with the trades and industries of the country.

The influence of the dull, unskilled task, the blight of overfatigue, and the natural impulse of youth to go to extremes of excitement as a relief, are a menace to our future. Wholesome wage earning has distinct advantages as a means of development, and it would be well if all girls could have some of it, but they must be saved from the mental, physical, and moral blight of working under deteriorating conditions without a preparation. It is a waste of human energy and leads to the habit of drifting about and expecting seasons of idleness. A great step will be taken when each young wage earner is trained to the job fitted to her. It is deadening to the enthusiasm of youth to feel that a chance to get ahead is virtually denied through no fault of her own.

6. Employers bitterly complain of the lack in their young employees of qualities which make for success in life, but the ability to face the world as a skilled worker has been proved to be one of the greatest forces in drawing out a girl's best characteristics and giving her personal dignity.

7. Legislation for the minimum wage and to raise the compulsory school year to 16 can not be effective until education provides the instruction which makes the worker's earning ability equivalent to the living wage, and which appeals to the young worker as worth staying in school to attain.

B. Some of the problems to consider when organizing trade training:

1. Women are employed in almost every industry, but few offer to them great opportunities for advancement. It should be characteristic of the trades for which training is offered that expert work is needed, slack seasons are few, the wages and chances of rise are good, and physical and moral conditions are satisfactory. If a trade, otherwise good, has long, slack seasons an allied occupation, busy when the other is dull, must supplement it.

2. The kinds of schools that are needed for young workers are the all-day vocational school, the all-day short-time trade school, the part-time day classes for those already at work, and the part-time factory school within the industry itself. For older workers there are short-unit courses in the night schools. In great industrial cities where there is pressure to go to work the all-day courses must be brief—three months to a year. The situation, probably, will be met best by the training in part-time classes. There is much danger in too short a training.

In small cities and towns the all-around worker is wanted in the industries rather than the highly specialized young girl. There are localities also where the wage-earning opportunities are in household arts—occupations in the homes more than in workrooms. The all-day vocational school will give its greatest service by offering two or more years training for all-around workers or in businesslike home-making courses, which fit for wage earning as well as for home life.

3. Comparing the wage-earning conditions and the trades open to women in various communities differences are found which must be considered before organizing a trade school. Trade courses which are successful in one city may not be adapted to another. Every city should make a survey of its own industries and educational facilities and plan its course of work accordingly. Nor must it be considered that a survey undertaken before a school is open will settle the matter for all time. Industry is a growing process and conditions obtaining to-day change to-morrow. The director

and instructors in such a school should continually keep in touch with the trades of their locality.

4. The vocational school is parallel to and must work in cooperation with the elementary, intermediate, and high school. The present tendency toward more practical, business-like courses in the regular schools is already laying a foundation for later wage earning which will serve the vocational school.

5. The workrooms of a trade school should have the same organization as in the working world. The product should be judged by business standards and made for the market. Work can be done for institutions and for private and wholesale orders, and the school should emphasize (1) business management in invoices of raw material and sales of product; (2) the taking of orders correctly and finishing them on time; (3) the apportionment of work that each student may have the work best for her; (4) the cooperation of the business world through the product made for them, and the bringing of a correct estimate of her wage-earning value to each student. The school must never underbid the market in the prices it charges for its product.

6. Every school that is training girls for wage earning should develop their ability to think and their knowledge of industrial conditions at the same time. Arithmetic and English in trade and everyday relations should accompany this training. The highest artistic design as a part of each trade should be considered fundamental.

7. Good health is an asset in business life. To attain it and keep it require individual knowledge, interest, and a strong sense of responsibility. Conditions of life for many workers are not favorable to maintaining good health unless they are taught the way to take care of themselves.

8. A trade school must be in close relation to the labor situation in the community. Injury may be done to other workers by training too many for an industry and thereby lowering wages; filling places with workers when a strike is on; selling goods at too low a price or selling to a workshop where a strike is in progress; training for an occupation without the accompanying effort to broaden industrial intelligence; and replacing well-paid positions with trade-school girls at a lower price. The needs of labor and the responsibilities and difficulties of the employer must both be fairly considered. Cooperating committees representing both sides should work with the management of the school. Trade agreements should be made between all parties concerned as to the class of training to be given, the possible salaries and the opportunities of advancement when the students enter the market. Diplomas of the school should be granted after a student has been a year in trade and has proved her ability to make use of the instruction.

9. The difficulties connected with the obtaining of an adequate teaching staff are at present serious but not insurmountable. All teachers of trade subjects must have workroom experience as well as teaching ability of a high order. Both teacher and trade worker are needed, but the combination is difficult to find united in one person. The future must solve this problem by adequate instruction. At present both kinds of instructors are in service and each is endeavoring to qualify while teaching.

10. These schools should be under public control rather than under private, for the advantages of the free school supported by public taxation are numerous. The different States which have begun this class of education have each their own ideas of management and as to whether the work should be voluntary or compulsory. The legislatures can decide these matters to suit their constituents. State aid is given in most States to supplement municipal taxation. Many States lack the requisite funds to begin the work effectively, and Federal aid is being urged before Congress and undoubtedly will be passed in the near future. This will equalize the opportunities in the various States.

C. The cost of equipping workrooms for women's trades need not be large if the school is willing to conform to the practical simplicity of trade workrooms. A sewing, dressmaking, or millinery shop can be equipped for 20 workers for \$300 to \$500; an

electric-power operating workroom for 20 workers, including the motor for \$1,000 to \$1,500;—this does not provide for special machines, which cost from \$25 upward—and a sample mounting and novelty workroom using paste or glue heated by electricity for \$200 to \$400.

The cost of running an all-day trade school need not be more than a high school if it also were open throughout the year. A trade school should always be open all the year and students should be allowed to enter at any time, or it will fail to really help the very class for which it is intended. The initial cost of preparing, equipping, and furnishing the Manhattan Trade School in New York City for 100 students was \$9,500; this included workrooms for sewing, dressmaking, white work, millinery, electric-power operating, sample mounting, and regular classrooms, offices, an art studio, a kitchen, and a lunchroom. The educational budget was \$50,000 when 950 girls were enrolled during the year and 300 were in attendance at any one time. The salaries took about half of this amount and rent and maintenance the other half. The raw materials for practice and order work cost about \$25,000, but this money returned to the school and gave a profit also.

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Mr. ANDREWS. May I inquire, Mrs. Woolman, what is the attitude toward your work on the part of the parents of the pupils and of organized labor? How do you get along with them?

Mrs. WOOLMAN. At first I experienced considerable trouble, because, being a university woman, they doubted me. But after I had been working awhile they saw that my very earnest endeavor was for them to learn what would be of the greatest value to them. By and by they began to see how interested I was, and gradually their attitude changed. Now Mr. Gompers and other labor leaders are very much interested in industrial education. But they insist that the instruction given in trade schools be complete and not merely superficial. I feel that they have a very great right to complain that many of those instructed in trade schools are found to be unqualified for industry.

Mr. ANDREWS. Do they cooperate at all?

Mrs. WOOLMAN. They have cooperated wonderfully. But as yet they are a little in doubt as to how it will come out. They are a little afraid of corporation schools. But I think that as they learn what we are working for they are beginning to cooperate more and more. For instance, in Minneapolis there has been wonderful unity brought about by having conferences and discussions between organized-labor people and those administering industrial education.

Mr. FISHER. I would like to answer the gentleman's question a little more fully. I think I may do it, because I have been in both trade-school and corporation-school work. I think that all you will have to do is to let the labor people know exactly where you stand and have your ideals right, and I don't think there will be any difficulty with them at all. Naturally, labor leaders are in advance of those whom they lead, and often the leader will be with you even when some one down in the ranks is objecting.

Mr. ANDREWS. I know that in some of the trades they have restricted apprenticeships, and it would seem that some of the trade schools would come into conflict with them unless there is cooperation with the approval of the trades.

Mr. FISHER. I should go no farther to get their formal approval, of course, than I should go to other associations of employers to get their approval. I should, however, like to have the individuals as well as the employers know what was planned, and to have an opportunity to state any side of the case, because you would get ideas worth while from both sides.

Mrs. WOOLMAN. In Minneapolis the effort has been to get all the different people together. They get along there remarkably.

Mr. BAWDEN. It may be of interest to-day to say something about these trade agreements in Minneapolis. The trade agreement entered into between the machinist's union and the association, the employing communities, and the board of education provides that approximately so many boys shall be trained each year, and the union agrees that if the boy completes the course he will be given a

substantial allowance on his apprenticeship. He will go out, not as a beginner, but as one who has traversed a certain portion of the highway. The employer, on his part, agrees to provide places for an approximate number of graduates at certain wages. In addition to what Mr. Fisher stated about the attitude of organized labor it may be of interest to say that this question about the limitation of the number of graduates is not quite so prominent in discussion now as it has been in the past, because labor union officials are becoming convinced, in the first place, of the sincerity of the leaders in the industrial education movement. They are convinced now that we are to have trade schools in this country, and that they are not going to be dominated by the selfish attitude of the employer. That problem, then, to a certain extent, has been settled. As I understand the attitude of labor at the present time it is this: The emphasis is on two points. In the first place, they insist that these schools shall be under public auspices—that is, controlled by the board of education, and by the members of the labor unions as citizens in the community. Second, they demand that whatever training is given shall be thorough; no attempt at short cuts in preparing workers for specific jobs, such as machine tenders or mere mechanics assistants. And closely correlated with that, of course, is that it shall not be a narrow form of training, but shall include this broader human interest in the work—the boy or girl to be developed as a human being, to take a place in life, and not simply be an operative in some factory. If the movement for industrial education can not meet these two demands on the part of organized labor, it is doomed to failure. I am sure, on the other hand, that if they are properly taken care of we will have the cordial support and cooperation of organized labor in the development of these plans.

Adjournment.

SESSION OF SUBSECTION 10 OF SECTION IV.

PAN AMERICAN UNION,
Wednesday morning, December 29, 1915.

Chairman, S. P. CAPEN.

The following program was offered:

Is there a profession of business, and can we really train for it? by
Elliot H. Goodwin.

The proper use of business experts in class instruction on domestic and foreign commerce. Papers presented by Roger W. Babson, Edward N. Hurley, Wallace D. Simmons, B. Olney Hough, Harry Erwin Bard, J. F. Crowell, John Clausen, and E. T. Gundlach.

IS THERE A PROFESSION OF BUSINESS AND CAN WE REALLY TRAIN FOR IT?

By ELLIOT H. GOODWIN,

General Secretary United States Chamber of Commerce, Washington, D. C.

In considering the subject of this paper, "Is there a profession of business and can we really train for it?" the question immediately arises, Who can give a satisfactory answer which will be generally accepted as final? My personal opinion could assuredly be of no value; the only advantages I possess are those of a detached point of view and facilities in my position as secretary of the Chamber of Commerce of the United States for securing information on matters pertaining to business. Nor would the mere opinions of deans and professors in commercial schools and colleges be accepted as unbiased. In the long run the question of the feasibility of training for business must be decided by the business men themselves, which is equivalent to saying by the results, for the results which advocates of commercial training seek are an increased demand by business heads for trained subordinates, which demand will be based upon an increasing success of school-trained over office-trained men, and must lead to an increased number of students.

But if it is to be the business men who will give the conclusive answer, how is this answer to be ascertained? Surely not by a referendum, much as I admire this method within its proper limits of usefulness. It has been essayed in at least one instance within recent years by a large manufacturers' association among its own members, and with results which should not be considered discouraging by the advocates of commercial education. As might be expected, however, the number that took the trouble to reply to the questions was small; the opinions expressed scattered over a wide field and were not in all cases subject to clear interpretation. In a new movement or

reform it is its intrinsic value, not the numbers that support it, that counts. For 13 years I was closely connected in an executive capacity with the civil service reform movement and I am proud still to be affiliated with it. The ultimate proof of its soundness rested in its acceptance by the sovereign people. In its inception it had but few advocates, who were the subjects of scorn and derision. During the first 10 or perhaps 20 years of its existence a submission of the question to plebiscite would have resulted in defeat; yet to-day it has proved itself not only by its widespread adoption but by the popular support it has received in elections where the question of adoption or extension was submitted to the people.

It is not, therefore, the opinion of business men as a whole which would be decisive as to the value of commercial education at the present time. Lack of experience, inability to forecast coming business conditions, and an obstinate instinct to stand by old methods and customs disqualify a large proportion from expressing an intelligent opinion. Mere numbers should not count; it is the enlightened business opinion and proof of its attitude for which we must seek.

The most satisfactory answer is to be found in the growth and support of commercial education in this country. From what quarter has come the incentive for the establishment of commercial schools and colleges and commercial departments of universities? From enlightened business opinion looking to the future. Again, what has been the moving force for the installation of courses in business administration looking to the training of young men eventually to fill the highest business positions, and again the answer, enlightened business opinion. Is this opinion well founded? If not, how account for the growth of commercial school and university departments since the establishment of the Wharton School of Finance and Commerce in connection with the University of Pennsylvania in 1881 and for the steady increase in number of students? How explain the demonstrated readiness of business men to cooperate with commercial departments by giving their time to lecturing, opening their plants to students, and the like? Assuredly interest may be stimulated by advertising, by novelty, by attractive conditions, but in the long run the law of supply and demand will assert itself. Universities and colleges will not continue to offer, much less to augment, courses for which there is little demand on the part of students; nor will students enter courses for commercial training indefinitely unless there is a demand for the commercially educated in the business world. And it is now nearly 35 years since the Wharton School of Finance and Commerce was founded.

It is difficult to get at the actual statistics because of the confusion that exists between business colleges, so called, which train only for the clerical, bookkeeping, and stenography branches, vocational and continuation courses and commercial courses of the university grade dealing with business administration. A complete investigation and report would be enlightening and no doubt encouraging. The Commissioner of Education of the United States in his report for 1913 lists 225 institutions under the head of university schools of commerce, notes growth in numbers and increase in enrollments, and points out that the New York University School of Commerce Accounts and Finance alone had on its rolls during 1912-13 over 1,800 students.

Whatever skepticism on the part of business men may have existed in the past in regard to the practicability of commercial training certainly has been greatly lessened in the face of the crisis through which we are now passing. The lessons of the war in regard to business come home particularly to those engaged in intercourse between North and South America. What more than any other one thing stands in the path of complete development of commercial relations between the nations of the south, cut off from their usual sources of financial aid and industrial supplies, and that rich nation of the northern continent seeking new markets for its over-supply above domestic consumption? In the face of the emergency and the oppor-

tunity bitterly must we, north and south, in Pan America regret that lack of real commercial education which goes beyond languages, commercial usages, international banking, credits, and foreign trade—needs which we are endeavoring to supply by emergency schools and classes—to those fundamentals of successful commercial intercourse, knowledge of geography, racial conditions, history, customs, and social life. The cataclysm of the European war caught the Americas, North and South, commercially unprepared and that unpreparedness lies mainly in the lack of commercial education.

The lessons of the war come home to us not only as regards foreign commerce but domestic trade as well. Individualism has been the keynote of the American business man. He has gone his way regardless of experience of foreign nations and scarcely realizing how new conditions abroad might affect those at home. With the opening of the war we barely escaped a financial and business panic. With the usual market for goods cut off, few were to be found who had studied where other markets for these goods lay and under what circumstances they could enter them. With immense production over what we could consume domestically, with an almost immediate demand for new manufacture on a large scale, the business man resorted to experimentation, sought hasty legislation and ill-considered remedies, realized, perhaps, for the first time the lack of properly trained men to advise and guide him in the new lines of opportunity and the almost insurmountable difficulty of producing without such aid and knowledge on a permanent basis those articles for which, although there was great need for them at all times in this country, we had been content to depend on foreign nations which the war had cut off from us. There is a movement now on foot, and fostered by the National Chamber of Commerce, for closer cooperation between our universities and industry, and we hear it frequently stated that the most promising field offered to the young man to-day is that of industrial research.

I am not unmindful of the fact that the subject prescribed for this paper called for an answer to the question "Is there a profession of business?" But I hold this of little import when compared with the larger question of the practicability of business training, and largely a matter of the use of terms. Little more is involved in it than the pride with which one announces himself a professional man and the belittling sense that some exhibit in admitting that they are engaged in business. The recognized professions used to be but three—law, theology, and medicine. The distinction that is made in favor of a profession is that of special knowledge acquired by preliminary training and education. The number of the professions has been greatly augmented, and they, or many of them, have been allied with or have become an integral part of business. Business, which covers at one time the country store and the department store, the individual in a domestic exchange and the great trust operating all over the world, is a multitude of professions and is becoming professionalized. Whether with the acceptance of the principle of education for business, business itself is rated a profession, as it conceivably might be entitled to be, is a matter of nomenclature only; its position in the social status will be equally well assured whether or not thus entitled.

Those who doubt and cavil at the value of commercial education for business have closed their eyes to the extent to which business is becoming professionalized. They have failed to note the lawyers, the engineers, the chemists, the accountants, the scientific managers who from positions of consultants only in emergencies have come to occupy positions of heads of departments, business managers, partners or chief administrators and owners. They have passed over with singular obtuseness the professionalizing of their own staffs, or of those of their successful competitors, in specializing in advertising, cost accounting, salesmanship, handling of industrial problems, employment, and the like. With all the advance that American business has made there remain those who refuse to recognize the changed conditions that time has

brought, who desire to be let alone to do business in the old way and who spend their time in inveighing against laws and restrictions, supervision and control, the organization of labor, and other conditions that have come to stay. Fundamentally they lack the education and the resulting elasticity to conform to the new and are engaged in butting their heads against a wall. Every now and then a failure in an old-established firm of solid reputation calls striking attention to this attitude of a part of American business.

The truth in regard to the success of American business was somewhat boldly stated by Hon. Frank A. Vanderlip, president of the National City Bank, some years ago:

With the limitless wealth of resources which we have had in America, the successful conduct of a business enterprise has been a comparatively easy matter. Nothing short of egregious error has been likely to lead to failure. Any ordinary mistake in judging conditions or in the application of principles has, as a rule, been obliterated by the rapidity of the country's growth and the extent of its industrial and commercial development. If some of the men who have made notable commercial successes had been forced to face the harder conditions that exist in the old world, the measure of their success might have been very different. Had they been confronted by a situation where population was pressing upon the means of subsistence, where all the soil was under cultivation, where the mineral resources were meager, and where there was lacking the wealth of the virgin forests, they would have needed greater abilities and better trained faculties in order to achieve marked success. * * * One should not lose sight of the fact that the lavishness of opportunity has brought commercial success to many who have come into the field illy prepared and with small ability.

It can not be said that these conditions have disappeared, but merely that we are realizing that they will disappear. Competition in business is becoming keener; success is requiring a greater degree of knowledge, breadth, and ability. The development of foreign trade has brought the American merchant in touch with foreign competitors and the lessons thus learned as to new methods of doing business have been reflected at home. It is one thing to compete with your fellow countryman in the home market behind the protection of a tariff wall and a totally different thing to break into the foreign market where a foreign competitor has already entrenched and compete with him with no protection of any kind. The lessons thus learned have their application to domestic competition.

The field for business education is there. How it shall be taught and how far it can practically be carried are the main questions. I leave the first to the educator to answer. Method of teaching is a question for the expert. As to the scope, the applicability of trade school training, vocational education, engineering, and other scientific preparation is obvious, but doubt is expressed as to the teaching of actual business administration where executive ability and business shrewdness play so large a part.

There have been and there always will be two schools—and it is really fortunate that it is so—composed of those, on the one hand, who lay main stress on the lessons of actual experience and those, on the other, who advocate the previous training as doing away in part the necessity of learning by experience. The one exercises a curb on the other. It is easy to maintain that too much time may be spent in preparation so that the youth is delayed beyond the proper age for taking up the practical end, but it is becoming more and more difficult to understand in the present and growing complexity of business how the youth who enters business as office boy or brakeman can acquire, through experience alone, the training which will advance him to the head.

Clearly the school of practical experience produces but a small proportion of men with large business capacity. As a method of training it is wasteful. It is equally clear that the college or university commercial training can not be expected to graduate only those of marked business ability any more than law schools produce great lawyers or medical schools produce great surgeons. Much remains with the man himself, his

inborn capacity and power to expand. Yet professional training for lawyers and doctors is now universally accepted. What is there about business capacity or executive ability that would place them beyond the pale of those things for which a special education is valuable? Is it the power to handle men? Then the training of the army officer or the professor should be equally futile. Is it the imagination, the power to grasp and arrange in an orderly manner and execute? If these can not be trained in part what practical purpose does education serve? To what end the study of history and biography if it does not enable us to apply the experience and the ingenuity of others to our own problems? In spite of the example of men in all walks of life who have started at the bottom and risen to the highest places, there is nothing so sad in business and industry as the consideration of that 90 per cent of those who are competent for the positions they fill but who lack the education or the almost superhuman will to make up for its lack which will permit them to rise above a certain dead level.

In commercial education lies the hope for the future of American business.

Mr. Goodwin's paper was discussed at length by Mr. Albert A. Snowden, of the National Association of Manufacturers, and Mr. J. F. Crowell, of the Chamber of Commerce of the State of New York, an expert on foreign trade.

Mr. Snowden said in part:

The National Association of Manufacturers is composed of about 4,000 concerns engaged in business. All of these member concerns have something like 6,000,000 employees. The extent of the organization is shown by the fact that our members produce more goods than any other industry in the country. We are interested in industrial education rather than in commercial. Perhaps there are hundreds of thousands of students getting instruction in industries and in industrial and commercial education in various forms of schools—State, municipal, private, and other forms. The students in our institutions are receiving education in a peculiar way. They are our employees, and while they are earning money they are receiving instruction in a practical way. I feel as though we ought to have a complete and thorough organization for finding out what has been done in similar organizations in other countries of the world. We have a very large audience through our publications in connection with these industrial matters. A perusal of these publications will show you that this body is greatly interested in commercial and industrial training.

There is a wonderful lack of space in this congress devoted to manufactured goods. It is in education along this line that we are interested. In the promotion of foreign trade it is absolutely essential that the trader may have knowledge of the manufactured goods in detail and the conditions of sale of such goods, etc. From our point of view, at least, it is considered quite practical that these courses, especially studies which are supplementary to the regular courses usually given in schools, include continuous instruction in matters connected with exports, the banking business, etc. There ought to be some classification of manufactured articles—from experiments myself I know there are somewhere between 35 and 40—and a part of the program should be given over to the treatment of manufactured goods.

Mr. J. F. Crowell remarked:

I wish to say a few words on the general question of whether business is a profession. It seems to me, from the experience I have had in the field, that it is not yet what it may aspire to, because the business man, taken as a class, has not developed any such privileged position as the lawyer, the physician, or the engineer. Again, the field of commercial knowledge is in no sense organized, as it is in medicine or in law or in engineering or in theology. In the third place, the sense of economic responsibility by which all business conduct can be referred to a common standard, is not so highly

developed in the business man of to-day as is the ethical which we find in the ministry or in the law or other professions. Fourthly, a professional career is not primarily a career whose end is economic profit. The business man's aim and end is primarily profit. The professional man works to attain and maintain a privileged position and a high standing in his community. Any profit connected with that work is, in a measure, incidental. The standing he attains in his community is a part of his reward. Furthermore, he works for progress in his profession—medicine, theology, or whatever it may be. The business man devotes himself to his business for gain, for profit, primarily, while the professional man follows his pursuit for the attainment of a privileged position. These distinctions seem to me to be conclusive as against the claim that you can train business men up to the high plane occupied by the professional man. Certainly business has not yet attained to anything like a professional status. I believe, however, that with the development of education there will be a marked rise in the standards of business men in business pursuits.

PROPER USE OF BUSINESS EXPERTS IN CLASS INSTRUCTION ON DOMESTIC AND FOREIGN COMMERCE (SYMPOSIUM).

The following are brief papers or authors' abstracts of the same offered for discussion in this symposium:

Mr. Roger W. Babson, president The Babson Statistical Organization, Wellesley Hills, Mass.:

The president of one of the largest of our country's great industrial organizations once asked me as to the best college to which to send his son, who was about to graduate from a preparatory school. The father said that he desired to fit his boy to become vice president of the great corporation and eventually to take his position as president and have entire charge of its investments, its property, and its employees. Knowing that the head of such a corporation should have some knowledge of machinery and engineering, I immediately suggested the Massachusetts Institute of Technology. This captain of industry, however, replied:

No, I have carefully considered its engineering courses and have concluded that the institute would not give my son an adequate education. I do not wish him to become an engineer, so interested in the details of his work as to lose sight of the great commercial questions, especially as I can always obtain experts who have far greater knowledge in their own lines than my son could ever acquire. I wish him to have a thorough training in general economics, banking, transportation problems, and especially a well-grounded knowledge of fundamental business conditions in order always correctly to diagnose present conditions and be forewarned as to what the future is to bring forth.

* * * * *

Thereupon I recommended that he send his son to a certain great university which gives a most thorough course in economics; but to this the father strenuously objected because the university in question did not have a sufficiently practical engineering department and because he did not approve of the doctrines taught in its economic courses. I then suggested that his son take a general four-year course at some other university and then two additional years of engineering work at the Massachusetts Institute of Technology, or, as an alternative, that his son spend four years at the Institute and then two years at the Harvard School of Business Administration. To this, however, he also objected, saying that his son, who was not a natural student, wished to enter business without much further education. Although he agreed that the six years divided in either of the two above-mentioned ways would be an ideal combination, yet he believed six years was too long in this instance. In conclusion,

he stated that the period of study must be limited to four years and that the course must be such as might be called commercial engineering.

This incident well illustrates the position which many men of affairs take relative to higher education for administrative positions; and whether or not we fully agree with it we should adapt ourselves to conditions and not to theories. Hence I hope to see more institutions soon make definite provision for meeting this well justified demand.

The kind of course which I have in mind may be outlined as follows: The first year might be identical with the other courses at any college, while in the second year the student might take up, with the general work common to the engineering courses, the study of bookkeeping and business mathematics and begin the study of applied economics. The third year the student might specialize along the line of options and begin the practical engineering work most applicable to the special option chosen. These options might well include a manufacturing option, a transportation option, and a banking option. For instance, beginning with the second year, a young man would decide whether he desires to enter manufacturing, railroading, or banking and general business. If he decides to enter manufacturing he will, before graduating, take some fairly advanced studies in mechanical engineering. If he decides to enter the transportation business, he will take strong courses in railroad engineering and electrical engineering. If, on the other hand, he intends to go into banking or general business, he will study the financial side of railroad and industrial enterprises as well as the further advanced features connected with general banking.

The main reason why I am anxious to have schools establish such courses of commercial training is because at the present time there are almost no such combined courses provided. There are institutions which give a good course in economics, and there are those which provide a good course in industrial, railroad, and general engineering, but very few seem to have grasped the idea of the necessity of a strong combined course such as this new course should be. In fact, this combination feature—that of uniting the strong, broad business training with the highest class of practical engineering—will make the course especially valuable. Moreover, most schools in order successfully to operate such a course would need to incur tremendous additional expense so as to provide attractive and suitable laboratories for the practical application of great industrial and transportation problems.

However, the establishment of such courses in any school would greatly help the institution on the public and financial sides, especially by causing the leaders of industry to interest themselves more directly in its work, by attracting young men of wealth who seek to prepare themselves for administrative rather than engineering positions, and thus creating a body of alumni of greater financial power.

Irrespective, however, of the general demand for such a course to-day and of the need of any school for such students as this course will attract, there is a far greater reason why all of us should aid in the establishment of courses in commercial training. I refer to our Nation's need for men trained along these lines. The need of a scientific education such as technical schools provide, and its value to the community, has been so thoroughly proved that it is unnecessary for me to dwell on the subject. As to whether engineering or economic training produces more for a community, I will not discuss. Engineering courses in all institutions are here to stay, and we must do everything possible to advance their growth and efficiency; but I feel nevertheless that future efforts along educational lines should be directed to turning to practical use the teachings and conclusions of our foremost economists.

Our Nation has grown industrially with great rapidity. We have the largest manufacturing, the greatest railroad systems, and the most powerful industrial organizations in the world. We unfortunately have also the greatest panics and the most reckless "booms," which are very largely due to the lack of economic training in our colleges. Every feature of mechanical, electrical, and chemical engineering has been taught

in its minutest details; but to the great fundamental factors of trade, upon which the ultimate progress of all our industrial, electrical, and transportation enterprises rests, we have given only the briefest consideration. For this reason, probably more than any other, although America leads in many industrial, transportation, and allied industries, yet we have one of the poorest commercial systems on the face of the globe. Young men are graduated from our universities capable of solving problems involving descriptive geometry, least squares, and the calculus, but utterly unable to discuss intelligently the fundamental principles of credit, trade, and conservation.

Our country has magnificent natural resources, great tracts of iron, copper and other ore, millions of square miles of most fertile fields, great forests of splendid timber, abundance of water power, coal deposits, and hundreds of other blessings. On the other hand, our people are wasting these resources, misdirecting their efforts and playing at politics, because the graduates of our colleges are not thoroughly grounded in applied economics. Our Nation is like a big, healthy boy, endowed with wealth and surrounded with luxury, blessed with a robust constitution, but utterly untrained. We waste our wealth, we misdirect our efforts, we become recklessly crazy during a period of prosperity and shamefully distressed during a period of depression, simply because the men at the head of our industries lack sufficient knowledge of applied economics and are utterly untrained in the study of fundamental business conditions. Therefore, I appeal to every member of this congress to use his efforts to provide a course whereby a young man must not simply choose between becoming a mechanical engineer of arts, but rather may graduate as a "commercial engineer" and thus become a member of a new profession.

All of us have been intensely interested as we have heard addresses relative to present-day education; but thus far a most important feature of the work has not been mentioned. Mr. J. J. Hill, Mr. Pinchot, and others have been preaching the conservation of our natural resources, while Taylor, Gilbreth, and their friends have been preaching the conservation of labor and time. Now, why not go a step farther and teach the conservation of wealth and the great fundamental principles of applied economics upon which the success of all the Pan American countries so greatly depends?

When I say this, I speak most seriously concerning the United States, for our Nation's progress during the next 20 years must be due to something else than our natural resources. Up to the present time our country has grown in spite of itself, because of what its great mines, forests, and fertile fields have produced. Moreover, our products have had little competition and our country has thus far been the only "land of the free and the home of the brave"—the only land to which the enterprising and industrious European could go and win his way. Now, times are changing; Argentina and the other South American countries are becoming great competitors of ours; Japan, with the great Chinese Empire, is bound to cause us much thought; while Russia, Siberia, Africa, and other countries are beginning to present great opportunities. This is likely to result in violent fluctuation of immigration, foreign trade, and many other factors upon which the success of our country has been so dependent.

Therefore, more than ever before, our own country will need, during future years, men thoroughly trained in the fundamental principles of economics; men who will not permit this country to be handicapped either by reckless periods of prosperity nor by distressing periods of depression; men who will eliminate unhealthy booms and ruinous panics; men who, graduating as economic engineers in this new profession, will understand the scientific management, direction, and development of our great industrial, transportation, and banking enterprises.

But if the chief aim of our educational system is to help young men to make money, then there should be some systematic way to make boys some day pay back to the community in real dollars some part at least of what the community has done for them. I am not referring to primary and secondary schools. We have these for the good and

protection of the community; and the community is justified in paying the bill, as it pays for police and fire protection. But when we give a man commercial training primarily to make money, some provision should be made to have him later pay back to the community in real money the cost, with a fair profit, of such commercial education. This is a step which should be developed at once, not only for the good of the community but also for the man himself.

In closing, let me say a word about experts. Experts can never take the place of teachers. It is well to have the boys meet these practical men of affairs; it would be desirable to have these experts lecture, guide, and even examine the teaching force; but they can not take the place of faithful teachers. Making money is one art, but teaching is another. Experts are usually very poor teachers. Our boys need real teachers and consecutive courses of instruction; not spasmodic or disconnected lectures.

In view of this, I believe that instead of attempting to substitute the expert for the teacher, we should select first those who can teach and then give them the required knowledge regarding these practical business affairs. In other words, we should at once begin to train more men teachers to teach business and economics as these subjects should be taught. In helping to so train these teachers, the experts could be of great service. Surely our professors and teachers should be responsible to some one who knows more than they do.

Mr. Edward N. Hurley, former chairman of the Federal Trade Commission of the United States:

Professional and business activities were once limited by national boundaries, but to-day the pursuit of any profession or occupation is likely to lead into the foreign field. Only political boundaries now remain; economic and industrial frontiers have been swept away. The business man, more frequently than any other now, becomes a citizen of the world. As foreign trade increases the question of industrial efficiency and of the fitness of the business man of to-day becomes more important. This touches particularly the college student, to whom the business man of the present, versed in the requirements of the domestic market, must eventually pass over the reins. A manufactured article never sells itself abroad as does a bushel of wheat. It must either fill a new demand or displace a like product from another country. And the early detection of the new demand requires as much, if not more, skill and organization than does the attainment of superiority in quality over the rival British or German article.

The college man entering upon a foreign-trade career, whether his individual task lies in the export department of a great American industry or takes him into the heart of Asia, is sure to be under the spur of competition. Export trade is a balance wheel to recurring periods of domestic prosperity and depression. The older European industrial nations prize their export trade, won through sacrifice and effort, sometimes through war. They will not lightly let it go. All British statesmanship and industry for four centuries have bent toward the capture of distant markets. The very essence of German imperialism, as conceived by Bismarck, was an industrial Germany serving all the world markets. While the boys of the United States have been educated to the responsibilities of domestic trade, a large percentage of the youth of Europe has been specially trained for foreign commerce. In languages, in world-business practice, in banking and in shipping law, they have been painstakingly instructed, and thus each of our great competitors has a huge army of capable young foreign traders familiar with the rules and phraseology of world trade, subjects of which all but a comparatively few Americans are ignorant. Our fortunate situation in this bountiful country has rendered unnecessary the thoroughness which characterizes industry in Europe. Long sheltered by a tariff that reserved the prizes

of the home market for home industries, the pinch of competitive necessity is only now being felt.

Nothing would enable the college student to grasp the significance of foreign trade so quickly as a contact in the classroom with men prominent in the foreign business of the United States. Men who are directly in touch with foreign competition can furnish detailed and practical information obtainable nowhere else, and in addition they will inspire the student with the enthusiasm which comes only from personal touch with big affairs. My intention is not to depreciate the systematic teaching of foreign languages, banking and shipping laws, commercial geography and the intelligent use of statistics, cost accounting and bookkeeping, and in fact a general systematic course in foreign trade. These are, of course, essential. I think, however, that such a course should be supplemented from time to time by lectures of experts from the business world. These men will make the student realize the vital relation between his studies and the conquest of foreign markets, and give him enthusiasm for achievement over our foreign competitors.

Mr. E. T. Gundlach, Gundlach Advertising Co., Chicago, Ill.:

Recent college experiments in the use of business men as class-lecturers prove, in spite of many failures, that the innovation can be made a success. But the talent must be carefully sifted, then coached in advance, and properly restricted. This conclusion may be stated with considerable confidence, for it is the unanimous verdict, both as regards the value and the limitation of the plan, of 15 leading universities. In several institutions, notably at Harvard University, experiments were begun early and have ripened into a system. This past experience, combining encouragement and warning, may serve as a guide to other colleges which, it is hoped, will begin similar work.

MEETS THE POPULAR DEMAND.

That the infusion of practical talks into academic college courses ought to meet with popular favor may be seen from the entire tendency in educational matters.

Testimony coincides that the tremendous growth in college attendance during the past generation has been consistently along vocational lines. Nearly all students not preparing to become teachers begin generally at the age of 18 or 19 to shape their college courses away from academic lines and in the direction of the careers they have planned. The colleges marked by the greatest growth during the last 15 years all throw emphasis on the vocational side of life, beginning, at the latest, in the junior year. (See report of Commissioner P. P. Claxton, of the U. S. Bureau of Education.)

LIMITATIONS AND WARNING.

The following is a digest of the experience of fifteen universities:

Before business experts can be used more largely and more successfully in our universities, attention must be called to the difficulties. In the first place, courses entirely in the hands of business experts, through a series of lectures, are nearly all failures. A regular teacher must take charge, mapping out the course and assigning subjects. In other words, there must be a master mind, a director continuously in charge. In the second place, the detail of each subject must be sketched out. It appears almost necessary to tell each business expert exactly the limits within which he is to speak; perhaps even giving him the questions in trade or manufacture to which the lecture is to be a reply. Many outsiders, upon appearing before a class of students, proceed to air their views on business ethics and on life in general. It is important to tell these business men that they are asked to speak because they know a subject, that other subjects are covered by other lecturers, and that each speaker will please confine himself strictly to his theme. In the third place, the lecturers must be thor-

oughly prepared. They must be notified long in advance and they must be asked to work up, not one lecture of an hour, but, let us say, one lecture of three or four hours, and then to condense it into 50 or 55 minutes. For one of the most common complaints made by universities appears to be that half the lecturers come without having much of anything to say, merely talking in a general way and sometimes closing before the hour is half over.

On all of the above the college authorities agree.

CHOOSE LECTURERS BY CANVASS.

If I may be permitted, I should like to add a fourth recommendation—namely, that the universities should make a different type of canvass to secure a larger percentage of capable men. While some of our highest grade business men are now lecturing, other “experts” have been secured in a haphazard way. The colleges must avoid securing from any one trade or line of commerce those men, of which every trade has its share, who are self-advertisers and publicity pushers. There is no question that in every line of business the most capable men are little known to the laity. Those of whom the public at large hear the most are not as a rule the leading counselors within the inner circle. They are the theorists and the talkers.

To secure the true students within any industry it will be necessary for each university to make a rather wide inquiry within the narrow limits of each trade. The judgment of competitors is fair, clear-headed, and impartial; and, in comparison with the limelight seekers, we should secure a very much higher grade of material.

Mr. Wallace D. Simmons, chairman committee on commercial education of the National Foreign Trade Council:

The National Foreign Trade Council, through its committee on education for foreign trade, has obtained from several hundred American manufacturers and merchants, exporters, bankers, etc., expressions with reference to our present methods of education and the extent to which they offer to our young people an adequate opportunity to get a thorough grounding for successful service in connection with foreign trade, either in work in the home office or in the foreign field.

It is needless to say that the reading of these letters has given our committee much food for thought. The opinions expressed and the suggestions made cover a wide field and a great variety of ideas. One can not help but be impressed, however, with the extent to which a large percentage of the replies point to certain few fundamental defects in our educational systems which exist to-day in most of the school districts of this country. These defects appear both in our elementary and our secondary schools.

For instance, we asked whether the present courses in foreign languages gave those who took them an adequate grounding for business correspondence or conversation in such languages. The replies were almost unanimously in the negative. Moreover, a large percentage of the gentlemen answering the questionnaire volunteered in that connection the opinion that the majority of our schools, even those of high standing in the country, did not turn out many graduates who could conduct business correspondence creditably in the English language, or who even use reasonably good English in conversing with customers or others with whom they come in contact in the daily routine of business.

The opinion was generally expressed that one of the most important changes to be made by our schools was that looking to an improvement in the ability to write a business letter expressed in terse, grammatical English, as well as the development of the ability to converse in a manner creditable to a representative of a firm of high standing. There was also frequent reference to the inability of graduates of our high schools and colleges to do, with reasonable accuracy and rapidity, such figuring as employees in all kinds of positions frequently have occasion to do. Another quite

universal comment was about the lack of accurate and adequate knowledge of the geography of our own country and of the world at large, especially commercial geography, such as should be the basis of an intelligent grasp of either domestic or international commerce.

All of these comments point to the need of finding some effective way to introduce into our school systems some method of getting the cooperation or guidance of practical business men. In this way the students may acquire a knowledge of what is directly useful in the current run of business to-day as compared to the great mass of information which could be acquired under this general heading, a considerable portion of which partakes more of the nature of history than of practical, present-day geography. Students now devote a great deal of time to this historical phase, most of which might better be put on those elements of the work which relate to the present time, and have to do with the facilities for communication and transportation in the world to-day.

If such a convention as this could develop a practical means for having our schools make good use of such information and suggestions as might be obtained from the business world, perhaps the educational committee of the National Foreign Trade Council might suggest some way of obtaining that information, not only the essence of it in definite and condensed shape on paper, but perhaps in addition to that, find some means of having it followed up in each locality by the cooperation of practical business men, representing those that are actively engaged in commerce. Through the cooperation of business men it may be possible for the educators of the country to impress our students more thoroughly with the importance of these fundamental things, and also to impress their parents with the relative value of thoroughness in them, as compared to the efforts that may be found in many sections of the country to "take" a large variety of subjects with the result that there is actually acquired very much less thorough knowledge of any of them than is needed to enable students to utilize the information effectually in their future work.

The field of opportunity in this direction is so vast and the present variety of available information so great as to make it an exceedingly puzzling problem to know how to begin to coordinate our efforts in some general movement that will make for effectiveness. Other nations have been giving this subject very much more thought and attention than we have during the past one or two generations. If we can not at first cover the whole field in such a way as to enable us to get as favorable results, we should find a way to concentrate on a few fundamentals and expand from them.

If we can get the educators of this whole country to teach these few things and teach them as well as they are being taught to the youth of other nationalities we shall have made a long step forward, and will make possible further development approaching the standards of our competitors for the trade of the world.

Harry E. Bard, secretary of the Pan American Society of the United States:

In the preparation for a career in foreign commerce four things seem to me to be of essential importance: (1) A complete course of study of constructive character, which would represent the experience and wisdom of various competent authorities in the field; (2) special methods for the different subjects which go to make up the course of study, including a complete outline of subject matter, proper method of presentation, classroom technique, etc., for each; (3) professionally trained teachers, having each a mastery of the subject matter, special method, etc., of the subject he is to teach and a good understanding of the relation of this subject to the whole; (4) business experts competent to supplement the efforts of the professionally trained teachers by lecturing on special topics in accordance with the general plan and method under the immediate guidance and direction of the teacher in charge, bringing to the students something of the knowledge and experience gained in practical foreign commercial life.

The number of different subjects which merit consideration in preparing a satisfactory course of study is large, and the work of choosing the most important and of organizing these so as to meet at once the demands of pedagogical science and the practical requirements of foreign commerce is such as to engage the best thought and efforts of those most competent for the task.

The work of developing a special method for each of the subjects included in the course of study is even more important. The selection and organization in detailed outline of the subject matter and the development of proper method of treatment and classroom technique can not ordinarily be left entirely to the individual teacher, although room should be left always for the exercise by the teacher of personal initiative and some reasonable measure of original thought. The work of business experts must be considered, and careful thought given to the nature of the subject matter which these experts will be expected to present and its proper relation to the whole.

Professional training for the teacher is essential and no amount of practical business experience can take its place. More emphasis rather than less should be put on the importance and need of such training. Teachers who have had practical business experience as well as such professional training as is implied above are not available, and will not be until teaching positions can be made more attractive than now. There is need then that the work of the teacher preparing students for a career in foreign commerce be properly supplemented, and this is the special function of the business expert.

The business expert will, of course, be a person practically engaged in the field of foreign commerce, who has a special message and is competent to present it. The topic of his lecture will have very definite relation to the subject as a whole. The students will be prepared to appreciate his message by previous instruction and assigned reading, which will be further driven home by subsequent classroom discussions and examinations. Occasional lectures on unrelated topics, even by the most competent business experts, will not give satisfactory results.

B. Olney Hough, editor American Exporter:

Seven years ago the president of a well-known university wrote to me: "Our experience, which was confirmed last evening by some of the professors from other institutions, has been that the ordinary business man called upon to address classes does not make the preparation necessary to present the subject in a scientific and concise way. He is quite apt to spend his time in relating unimportant incidences rather than give his whole time to matters which instruct them."

My reply to the president was then and would be to-day: "Is it not possible to utilize the knowledge and experience of businessmen, and make both effective instruments of education, through suitable cooperation and editorial supervision on the part of professional educators?"

It is certainly true that the actual motions involved in doing business can not successfully be taught from textbooks. It appears to be true that schools, and especially colleges, too often disdain not only the motions but the very spirit of work in the business world for which they profess to be preparing boys and young men, devoting themselves wholly to what may be called the "higher aspects" of commerce, to theories of tariff and finance, to pure economics, if there is such a thing, instead of to applied business science.

On the other hand, it is certain that few business men have either the inclination or the time to take any active or personal interest in the progress of the employees in their own offices. It is especially characteristic of business establishments here in the United States that when a youth secures a position in an office he is virtually left to work out his own salvation, to swim out unaided to the raft "Success." Our apprenticeship system, lacking or woefully weak in the trades, absolutely does not exist in the office. That is another and equally as serious a problem. What concerns

us in a preliminary way is: Can the business man so help in the youth's educational equipment as to enable the young fellow to swim faster and with surer strokes, once he has been thrown overboard into the sea of business life? We have to remember that few young men indeed leave school, college or postgraduate university to take their seats immediately in cushioned chairs about the director's table. Nine hundred and ninety-nine out of every thousand must begin at the bottom of the ladder, no matter what their educational equipment.

Undoubtedly the business man can profitably be utilized in schemes for more practical business education, especially in view of the intensifying consciousness of civic and national responsibilities which is so encouraging a characteristic of the times. Business men are to be found who not only are masters in a broad way, as well as in detail, of the principles and minutiae of their own affairs, but who are generously disposed to do what they can to raise the plane of the country's business life. But none of them are teachers. Few of them but are too far removed from their own school days to recall distinctly how lessons were taught. Most of them have had much else to think of during recent years than modern educational theory.

To ask business men to take into their offices for practical work boys or young men who are spending a part of their day in the schools is, theoretically, an ideal plan, coupling educational equipment, text-book training in theory and the "reasons why," with actual, routine day-to-day business transactions, and furthermore cultivating habits of method and application. Such opportunities may be earnestly sought and eagerly embraced, but are almost certain to be few. It is to be doubted if any considerable number of employers will be willing to suffer the really severe tax on their time and the inevitable disruption in their offices which such a course is bound to occasion if the young men are to receive real assistance, even attention.

On the other hand, if business men are only to be relied upon as lecturers, supplementing school and college courses, then it will probably be the part of the professional teacher to take his business man in hand and, through a joint study of the situation, in a spirit of mutual helpfulness, together map out clearly and definitely the exact lines of the business lecture. This will involve quite as much work on the teacher's part as on the business man's, very likely more. The business man has many things to say; most of them he considers important if not essential. Can he condense them all into an hour's talk and make all of them effective? Usually not, it is to be feared, unless the subject has been thoroughly thought out and blue-penciled by teacher and lecturer together.

The criticism which I have had to make of certain experiments during the last year or two with business men's talks on export trade to classes in New York has been that lecturers have been given or have been allowed to choose subjects at once too broad and too deep—subjects whose adequate discussion would properly involve a series of 10 or 20 lectures. Result, one hour of glittering generalities, or a rambling talk getting nowhere, without sufficient emphasis or explanation as to any single essential feature to drive the lecturer's lesson home. To expect students themselves to put questions to the lecturer in order to clear up points they have not understood is to suppose them already experienced in practical work where those problems have arisen, or to have powers of quicker appreciation and keener analysis than young men without actual personal experience usually possess. In most cases it has seemed to me that the lecturer's hour of crowded, complicated detail, or in some cases of rambling, indigestible technicalities, has been accepted merely as a mass of statements, few of them really comprehended, fewer yet, if any, assimilated.

Commercial geography, as only one example, is, it seems to me, one of those branches which is not satisfactorily taught to-day but one in which business men, manufacturers, exporters, and importers, might effectively cooperate. Scant attention is commonly paid to the whole great subject in high schools, none at all in colleges. Yet it is hard to imagine another course which might be made so broadening in its influence on Young America in an elimination of provincialism, to say nothing of advantages

its appropriate teaching should offer the man who expects to follow a business career. Common elementary and advanced geographies are forgotten too soon. Teachers progress too quickly to so-called "higher branches." Commercial geography ought to rank among the highest of the business man's courses. He ought to have learned not only what many textbooks include, the characteristics of Sea Island and Egyptian cotton fibers, for example, but he should have been taught the vital distinction existing between cotton textile manufacturing and marketing methods in England and in the United States, which commercial geographies rarely, if ever, treat. From technical trade details like this up to the psychology of the peoples of the world as affecting commerce and buying and selling relations, from the climatology of Latin-American coast and mountain towns to business customs of the East Indian—in a hundred aspects of the subject experienced merchants and technical experts can most advantageously be utilized.

The benevolence of manufacturers and merchants of the United States has freely been bestowed on trade and technical schools. Can it not be wisely extended to schools of commerce of a broader description? I have always been particularly attracted by the bourses de voyage offered by many a European chamber of commerce to prize students in local business schools. I especially remember reading two really interesting and informing theses submitted after a year of business experience respectively in Hamburg and Manchester by students holding such prizes from the Chamber of Commerce of Algiers. Why should not our American, North, Central, and South American business men and chambers of commerce similarly encourage commercial students, encourage them by making it easy to acquire that actual acquaintance with and experience in other lands which is indispensable to the closer understanding, sympathy, and community of interests which we preach and seek? To the personal assistance of individual business men to higher commercial education let there be added the broader interests of manufacturers' associations and local chambers of commerce. Support, help, encouragement of individuals is necessary and good. Better may be the official recognition by important bodies of business men of business students' diligence and success. Students from Latin America, following many different courses, are plentiful in schools of all descriptions in the United States; the working, business, postgraduate student from North American commercial colleges is unknown in Latin America.

John Franklin Crowell, executive officer, New York Chamber of Commerce:

What is the proper use of experts from the business world in class instruction in school and college on domestic and foreign commerce? This theme of the symposium under the general topic of commercial education indicates that the expert is not in himself a sufficient exponent of educational direction in training for these two main divisions of commerce. The expert is a specialist. Specialists are not to be accepted as authoritative outside of their own field. In a sense, therefore, the question is a plea against specialism being put in charge of directing and instructing those contemplating a commercial career. This is a sound viewpoint, if it is not carried too far.

I. WHY EXPERTS ARE NEEDED.

Commercial knowledge is not well enough organized, it is not well enough in hand on the part of teachers to dispense with the specialist. No system of commercial instruction in colleges or universities can get along without the business expert for several good reasons. One is that no one outside of his sphere, in which he is master, has acquired the general results of his experience, so that they may be taught without him. The other good reason is that probably no one else can speak for the specialist except in a quite general way. Therefore, we shall always need the specialist to speak for his division of the economic world about which the student is endeavoring to learn.

II. HOW AND WHOM TO SELECT.

What different kinds of specialist are desirable for a school or collegiate class, seeking to acquaint itself with the facts and purposes of commerce? This will depend somewhat on the scope of instruction included in the curriculum. If it be a graduate school, in which the baccalaureate degree or its equivalent is taken as the basis of the student's attainment, the kind of business experts whose instruction may be of value will be more highly specialized than if it were an undergraduate school. For the undergraduate school the general results of expert experience should be emphasized rather than the special results. Specialism in its higher forms belongs rather to the graduate level of instruction.

III. HIS WORK—TO BROADEN FOUNDATIONS OF BUSINESS TRAINING.

The expert should be utilized to lay a broader foundation for business training. On these general lines I should say that the undergraduate commercial instruction on domestic and foreign commerce should include the following topics, each represented by some specialist or expert who could sum up the fund of knowledge in his field and present it in its relation to business. These could be used to advantage:

1. A statistical expert on population, including occupational classes.
2. A statistical expert on natural resources.
3. An expert on the products and distribution of the products of agriculture, manufactures, etc.
4. An expert on the different branches of commerce, including raw materials, manufactured commodities, and miscellaneous.
5. An expert on inland transportation.
6. An expert on maritime transportation.
7. Engineering experts in various fields of construction.
8. An expert on financing commerce both domestic and foreign. This should include both the outward movement of raw materials and manufacturers from sources of supply and the reverse movement of funds from consuming destinations to ports of origin of products. This would bring out the whole economic régime of financing trade. This might be called the mechanism of the market presented from the financial standpoint.

We must bring into our class instruction in commerce more of the international viewpoint. The specialist in this field is not so easy to find. But there are still a considerable number of professors, lawyers, congressmen, diplomats, active or retired, and others who may be induced to serve in such capacities. Not infrequently there are merchants who have made special study of the problems arising out of our foreign relations in commerce. These should be available, if properly approached.

IV. COOPERATION OF TEACHER AND EXPERT.

The supply of experts will determine in part how much use may be made of them in any particular institution's work. This in turn will depend on what they are asked to do. As a rule it may be expecting too much of the specialist in business to turn educator and meet essential pedagogical standards. In my own experience with such men good results have been achieved by giving the expert to understand that their service is to be valued rather for its suggestiveness than for its systematic array of knowledge. After all, what we want from the practical man is to stimulate interest in the work of his field. We want him to arouse the students to asking questions, to give him a chance to answer them on the spot. In engaging a specialist for an individual talk or two, it is in general a safe thing to ask him to keep in mind three or four topics and to have a good illustration or two under each topic. These instances of experience give concreteness to the topical features of his talk.

For example, you engage some one to speak on India. You can easily tell him in what kind of questions the class is interested. A half dozen questions relating to the population of India, occupations, standards of living, currency, foreign commerce, and the competition of different nations for their trade—these would enable the expert in that branch of foreign commerce to put together valuable information by which the student could compare that of other Asiatic peoples of whom he has knowledge.

V. THE STUDENT'S PREPARATION FOR THE EXPERT.

The use of the expert will be very much enhanced, if, on the basis of such an outline, students be held responsible for having certain information on the subject either by reading before hand or within a certain period thereafter. Take the case of India. Three or four questions requiring brief answers, but which can be answered within 10 minutes, may be given as a test of the power of the student to restate the essentials of the lecture. Without some such method of conserving the valuable results of a specialist's talk there will be much waste.

VI. USE OF THE SINGLE-PAGED SYLLABUS.

A method which I have followed in this class work is to make a single-paged outline or syllabus of the main topics which the speaker is to discuss. This may cover probably the third of a page of the syllabus. The second third may be occupied with references to several books on the reserve shelves of the library, giving chapters and pages so as to make quick reference practicable. The third feature should contain a list of ten questions to show how much the student carried away with him. These test questions should not be too ambitious; they should be brief, based on a good body of fact, and serve to cover the four or five features of the address of the expert.

From this test it is apparent that the extent to which the expert can be used will depend a good deal on the management of the class. The zealous, enthusiastic teacher of commercial subjects, who inspires his students with earnestness and concentration, can get the best kind of individual and team work by preparing beforehand his class for the expert. This is due to the expert who usually works for no pecuniary reward. This preparation of the class for the expert's arrival, is, to my mind, one of the most important parts of commercial education at this stage of development.

VII. ILLUSTRATIONS FROM SHIPPING AND AGRICULTURE.

Take the expert who comes from one of the leading shipping companies of the United States, who goes hundreds of miles to a school, college, or university only to find that neither the class nor the professor has made any preparation for him. This is a waste of good effort as a rule. What should be done, as I see it, is this: The teacher or director should see that himself, as well as the class, has made some general preparation. He may speak in an introductory way on the shipbuilding industry of the United States as relating to ocean transportation or internal commerce by way of the Lakes. The student should be familiarized beforehand with the facts of shipping or shipbuilding industry as found in the report of the Commissioner of Navigation. If the expert comes from the Department of Agriculture to speak on the crop movements, the Agricultural Year Book of the United States Department of Agriculture contains the information with which students should be more or less at home. They should get the main facts of the size of the five leading cereal and cotton crops, acreage, and the proportion of each which passes into foreign commerce. This kind of cooperation between the school and the expert will go far toward improving the advantages of the system.

VIII. RELATIONS BETWEEN SCHOOL AND BUSINESS.

The fact is that the expert himself needs to be instructed in the preparation of his knowledge for imparting it to classes. In doing this the people in charge of the commercial instruction in school and college have great responsibility.

Something can be done to bring the expert up to the educational standard of service by keeping the men one has in view for future service informed on what his school is doing. Business men are interested in these efforts, and the educators in this special field can do much for their cause by developing relations of interest between school and commerce on these particular lines.

Mr. John Clausen, manager foreign department, Crocker National Bank, San Francisco:

The people of this country are awakening to an appreciation of the importance for more intimate relations—in business, social, and intellectual activities—with our sister Republics in Central and South America; and while perhaps of the more vital problems which at present impede the free flow of our trade with Latin America is the noticeable absence of adequate banking and shipping facilities, organized to advance American interests, of no less importance is the lack of specially trained men to carry out the necessary missionary work, which can not readily be crowned with success unless these representatives have been intelligently developed to approach the merchants of that section in terms familiar to our neighbors in the Southern Hemisphere.

In the development of closer relational ties our first thought and attention must therefore be given to the necessity of acquainting ourselves with the customs and languages of the peoples of those Republics, as also in other foreign countries, and at the same time endeavor to modify our present home business-winning methods to suit the sentiments and prejudices of our foreign friends. Unless these vital points are seriously taken under advisement our efforts will prove fruitless and the competition of more progressive nations who have taken these important issues into consideration will eventually compel us to retire altogether from the field of the world's commercial struggle.

While individual opportunities are even now offering themselves to our enterprising business men the general prosperity of Latin-America trade can only be guaranteed by a ready cooperation of all elements in our national business and commercial strength.

Our attention is daily called to the scarcity of available young men who, in a competent and honorable manner are qualified to occupy positions of trust and responsibility. To meet this crying demand of the commercial world, too little importance is given to the necessity of finding a common ground on which the business man and the educator can meet and solve the great problem for a better cooperation in the national movement of fostering trade relations. In this period of our civilized development, we must not only be impressed with the thought for betterment, but with the material means to engender that thought into practical application and effect and, consequently, every encouragement should be afforded the matter of providing for the establishment of schools of commerce to pursue a regular study of commercial, intellectual and cultural relations between the various peoples of the world, keeping pace with the corresponding commercial and political developments.

I should be inclined to go so far as to recommend that, through national or State legislation, every university, college, and public school give preference to commercial studies of trade and finance, making this feature compulsory and requisite to the obtaining of certain academic degrees.

If we accept the assertion of the Sage Foundation, that only 5 per cent of the males in the United States are prepared by definite education for their occupations in

life, it is readily conceived that our present courses of early studies are wholly inadequate to meet the need of our young element, who in such a large percentage plan for a commercial career. It would seem that the first forward step to devise effective courses of study and developed methods of commercial attainments, would be to unite the educational agencies in promoting the move of specialization in instructions for the most direct preparatory training, as covered by the following principal class subjects, viz: (1) History; (2) modern languages and literature (preference to be given to Spanish and Portuguese); (3) industrial economics; (4) commercial economics; (5) political economy.

A young man with a theoretical commercial training and the additional linguistic attainments brought about by such a course would assuredly prove of infinitely more value to his employer in many fields than one who lacks such qualifications.

For the benefit of the scholar, a merit system should be encouraged for appointments into the staff of commercial and banking institutions engaged in foreign trade of worthy graduates who in their sphere of endeavor have demonstrated their fitness to occupy such position of junior posts. It should not prove a difficult matter to secure the moral as well as the effective support of our large banks and commercial houses in providing for a suitable number of applicants from the available list of students who have graduated with honors.

While I realize that such a course may already be in vogue among a few philanthropically minded captains of industry, it is seldom pursued with a view of benefiting the commercial concern, but rather to bestow a gift of gratitude upon the educational institution from which our successful business man may have graduated. A compensative purchase and sale of knowledge, however, should take place instead—in that the universities, colleges and high schools, while being compensated for their services during the term of schooling, can not well consider their contracts completed, until the young man is qualified and given the opportunity for the effective development of his ambitions in commercial life, and on the other hand the commercial and financial concern may in confidence accept the applicant into their service with the feeling, that his thorough training will be valuable to them, because of his ability to practically commercialize his theoretical knowledge.

We often wonder wherefore a business concern does not prosper or advance in the same measure as another, and the reason can generally be attributed to the lack of fundamental knowledge and training which is not readily acquired during the active strife for supremacy in the business world.

The laudable activities of institutions such as the Young Men's Christian Association and the American Institute of Banking can well be considered criterions in the demonstration of the desire for education along commercial lines, when it is considered that even members of advanced age studiously devote their evenings in acquiring the essential points of business training which were not afforded in their younger years of schooling.

The commercial and business classes of the Young Men's Christian Association are highly commendable and its organizers are ever mindful of securing able teachers and lecturers, who give their unqualified support in the advancement of commercial education.

It is of interest here to note that the San Francisco Chapter of the American Institute of Banking offers every opportunity to its members for the acquisition of a broader knowledge in banking and finance, commercial laws, accounting, public speaking, as also in the study of the Spanish language, which only recently was inaugurated in the interest of better Pan Americanism, and the institute now boasts a class of 135 pupils who are enthusiastically lending every effort to the successful mastery of this linguistic attainment.

The foregoing considerations are especially cited to emphasize the value of such studies among the younger element of our race, who in later years expect to grasp in a

more than routine way the spirit and ideals of foreign trade relations, more particularly with the Republics to the South who are to be our customers in the future. Only so can we win their full confidence and place ourselves in a position to deal with them year in and year out, upon a basis of mutual understanding equally as satisfactory as that so intelligently laid down by our European contemporaries.

In conclusion, and with a view of interesting the presence in our educational institutions of tutors who have visited Latin-America and intimately associated with its representative men, may I direct attention to the return visit of merchants and bankers of the United States to our sister Republics in Central and South America, which, as an outcome of the recent Pan American Financial Conference, is now being arranged by a special committee of which Mr. James A. Farrell, president of the United States Steel Corporation, is chairman, strongly recommending that a suitable number of educators accompany that body, so that on their return they may be qualified to speak with authority concerning the affairs of our sister Republics and incidentally lend a helping hand toward the national move for closer relations between all the Americas, as also to the need for specialized commercial training in our educational institutions.

Keen interest was shown at all times in the papers of this session, several of which were discussed at great length from the floor.

Mr. John F. Crowell remarked:

The expert is the hard man to find. This is not because he does not exist, but because he is working in a particular field. One of the main difficulties is that the average school-teacher is not acquainted with a large number of business men. The man who teaches commercial education and does not make at least two new acquaintances in the business world every day is a failure. But when we come to specialists, we have to hunt for him in the business world. We should go to him and tell him to come up before our boys and tell them what he does in the handling of a particular line of goods. He will come before the pupils and tell them where the article originates, how it is distributed, what depots there are for meeting the national and international needs, and why they are located at Shanghai rather than at Hongkong or Harbin; what is the object of maintaining this kind of organization rather than that kind; what kind of implements are sent to this country or to that, and why. The youth will grasp the idea. He will talk to them in such a way that the boys will have a mental picture of the country, of the conditions, and they will, as the bent of the boys naturally is, want to go to that field.

When you come to the problem of transportation you can go out and get a man like the traffic manager of one of our trunk lines and bring him before a group of boys, and he will tell them how tens of thousands of cars are handled, how they are moved from, for instance, Pittsburgh to the seaboard. He will tell the students of a concrete instance where a man arranges for the sale of a large quantity of commodities, say, 10, 20, or 30 carloads, but is unable to get them to destination and close the sale, and may be compelled to dispose of them by auction in order to protect himself. These things mean something to the boys. There is not an expert that can not light up the dull theme of arithmetic, for example, by applying its principles to the huge business of transportation.

Take the marine expert. You can get a man who has spent all his life in the shipping business, and he will come to a class and ask what is the average tonnage of ships built in the United States in a year. Teachers, as a rule, do not impart to boys such information as that. Their mind has not been trained in that direction. The mind of the expert has. Therefore, while you, on the one hand, do not put such questions as the one I have suggested, the expert in marine shipping would naturally think of such a question at the very outset of his talk with boys.

Prof. John E. Treleven, representing the University of Texas, spoke of the effort made by that institution to use the expert in its business training courses. In part he said:

We have first tried to select our men with unusual care before we have extended an invitation to an expert to address our students. We have selected the expert with an eye to the probability, as near as it could be determined, of his delivering to them a logical, practical, and beneficial talk. In the second place, we have been trying to prepare our students to listen to the lecturer. We have been trying to prepare them by some systematic course in the same line as that upon which the expert will address them when he comes into the classroom, and by means of assigned readings. In the third place, we have made it a point to have a conference with each person who is to come in contact with the boys. We have also made it a point to talk to the latter themselves before the lecture is given by the expert. Usually, when our professor visits the expert, he does so in his own office; that is, the office of the expert. He talks with him about his work, finds out the things in which he is particularly interested, and helps the expert to furnish the materials which he will use in the presentation of his lecture to our classes. We have found that if we take the expert out of the formal atmosphere of a classroom, he does better work. Then, in the smaller classes, we ask him in to a round-table discussion, either in the homes of professors or in the lounging rooms of the school. In the larger classes, we ask the expert to meet our classes in the lobby, where there are easy-chairs, and where the expert does not feel that he is delivering a formal lecture. The professor is furnished beforehand with a line of questions to which he wishes answers. This line of questions furnishes the basis for the expert's talk, and this serves to keep the lecture within the bounds intended.

Mr. E. L. Wertheim, of the Young Men's Christian Association, West Side Branch, New York City, said:

Out of 3,600 students last year who came to us to study something along definite commercial lines there was collected over \$90,000. That is one association.

The matter of getting men to lecture is of especial interest and importance. The expert has a contribution to make to the cause of education, and if we can guide him we are doing something that is well worth while. You will find that if you ask an expert to come in and speak, he thinks it necessary to go immediately to the library and read up on his question, rather than take something he is dealing with constantly, daily, and that will be of much more interest than anything he could prepare on. The man who tells of the things that are of everyday occurrence with him is the man who will be the most beneficial to the men and boys.

I am afraid we have not in the past sufficiently recognized the dignity of commercial education. We have not sufficiently recognized, in practice, the fact that men fail in business because of the lack of proper training. I wonder whether commercial education will receive very much attention in the future unless we begin now to give more attention to it. We have schools, secondary schools, which prepare boys for college. There we have preparation. Why is it not just as possible to spend a portion of the preparatory period in training the boys to take their places in the commercial world, rather than to step from the secondary schools into the college? Isn't the one as feasible as the other?

Mr. S. P. Capen, specialist in higher education of the Bureau of Education of the United States, remarked in closing:

It seems to me that the profession of business, which is becoming recognized as a learned profession, is itself undergoing the experience of older learned professions.

Originally all professional training was in the hands of the practitioner, and you must suppose for the professions a condition very similar to that in which commercial training now finds itself, commercial training being largely in the hands of the practitioner or the expert. This is for two reasons chiefly: First, that you have not enough teachers trained in exactly the right way for your needs to train others in the profession of business; and, secondly—and this seems to me most important—as I judge from what has been said here, that you have as yet no recognized teaching content. Is not that the case? Isn't it necessary, first of all, to know just exactly what knowledge shall constitute your higher courses of commercial training, and isn't it necessary to organize that knowledge into a system, to organize, in a word, a teaching content and turn that over to the teacher? It is only the occasional expert which you now get in schools of medicine and in schools of law. In medical schools the teachers give almost their entire time to the work of teaching. The same is also true of the law schools. I anticipate it will be true of the schools of commerce and business administration in a very short time.

Adjournment.

SESSION OF SUBSECTION 1, OF SECTION IV.

GEORGE WASHINGTON UNIVERSITY,
Wednesday afternoon, December 29, 1915.

Chairman, ERNEST C. MOORE.

The session was called to order at 2.30 o'clock by the chairman, who announced the first paper on the program, "How may the school be made an effective health agency," by Dr. Thomas D. Wood, of Columbia University:

HOW MAY THE SCHOOL BE MADE AN EFFECTIVE HEALTH AGENCY?

By THOMAS D. WOOD,

*Columbia University, New York City, Chairman of the Committee on Health Problems
in Education of the National Education Association.*

The progress of the twentieth century has been marked by no more important development than the increasing attention given to the conservation and improvement of human health. This movement has been quite general throughout the civilized world. Some aspects of the campaign for better health are, of course, profoundly disturbed by war. And yet, the value of health to the individual and to the Nation is never more clearly recognized or more sharply emphasized than in time of war. At the present momentous epoch in the history of mankind, the great war in the Eastern Hemisphere contributes an unprecedented force to the collective argument which is convincing the nations of the western world regarding the importance and scope of national preparedness not only with reference to possible emergencies in international relations but even more for the sake of an effective program of national and world progress in times of peace.

The fundamental item in the welfare and success of an individual, of a community, and of a nation is biologic fitness or health. The problem of health involves all items in the life of the individual and almost every phase of human relationship. It is apparent that provision for care of health must depend upon many and diverse agencies. Without attempting to enumerate and classify all the factors and lines of influence and control required in a complete program of provisions for human health, the consideration of any particular agency in this group should recognize the cooperation with other agencies as clearly as the details of its own work.

The school is peculiarly situated as an agency of at least great potential usefulness in the health field. The care of the health of a people depends upon legislative, judicial, and executive functions. But more important and fundamental than all of these factors in the preventive and constructive program aiming at the conservation and improvement of health are the significant and essential educational influences. These must include the acquisition not only of ideas but of motives and habits of health.

In a nation with compulsory education and with free schools the possibilities of a public education program are extraordinarily impressive. The acceptance of the rapidly widening social scope of education, in preparing the young for all privileges and responsibilities of life, carries inevitably with it the opportunity and duty that the school shall undertake an important, if not the most important, part in the entire continuous health campaign.

The school in the United States, at least, is the universal, the officially accredited, and the strategic agency for leading in the educational program of health and for

organizing and directing the health care of children of public-school age. Much of the actual work of health care of these children must be accomplished by the home, by health boards, and by other organizations both governmental and voluntary. However, it is the peculiar privilege and province of the school to standardize the principles and methods of child nurture and training.

The preparation and administration of the school as an effective health agency involves a considerable number of factors. The most important function of the school as a health agency is to guard and promote the health of the school children. The most significant and essential of all our national resources is the national vitality—the health of all the people. Further, the most valuable asset in our capital of national vigor is the health of the children. Twenty per cent of our entire population (over 20,000,000 children and youth) are attending school. For the sake of their own complete well-being and for the welfare of the State they are compelled to attend school at an age when they are peculiarly susceptible to acute disease and to many forms of physical defect. The school is, in its very nature, perfectly adapted to serve as an agency for assembling and distributing children's diseases throughout the community, and all too frequently this is just what occurs. The best knowledge and skill of preventive medicine and the efficient service and cooperation of all available forces—physicians, nurses, teachers, school officials, parents, and even the children themselves, are requisite for a reasonable minimizing of these diseases of child life.

The least the State can do in this negative service of the school as a health agency is to provide all the required means and agents to protect the children from disease and injury while they are compelled to attend this State institution.

The communicable diseases of childhood increase in prevalence from the beginning of the school year with the development of the winter season, and the more intensive housing in of children at school and at home until March, when the springtime gives the children more outdoor and more healthful conditions for living.

Every school vitally needs an efficient form of health supervision with medical direction; with the strikingly effective services of properly qualified school nurses; with the essential cooperation of well-trained teachers and of parents willing to do their share in promoting the welfare of all the children. The methods of controlling and preventing communicable diseases among school children will be greatly advanced when parents and guardians keep away from school for one day at least children who show any of the following health disorders, which, if not communicable, are often forerunners of the communicable diseases: Vomiting, faintness, chill, fever, eruption, running nose, red or running eyes, sore throat, swollen glands, new cough.

We have in New York State the first regularly constituted State medical inspector of schools. Corresponding health officials are needed in the schools everywhere.

Closely allied to the control of acute disease is the attention to all health defects of children. About 75 per cent of all of our school children have physical defects which are potentially, if not actually, detrimental to health. Most of these are partially or wholly remediable.

Rural school children at the present time in the United States are, on the average, less healthy and are handicapped by more physical defects than are the children of the cities. The best of our human material for the Nation's needs must in the future, as in the past, come from the farms.

Children handicapped by health defects can not make the best use of the education offered or forced upon them. Education which pretends to help prepare the children for life can not logically neglect any element of vital concern in their development. As a health agency the school must not only bring to light the health conditions and limitations of the children but must make sure that requisite care is provided for removal and correction of existing defects.

The health program should include:

- (a) Health examinations, with dental inspection, at least once a year.

(b) Follow-up health service by school or district nurses, with cooperation of home and available organizations.

(c) Provision for correction of defects by medical care and by health and dental clinics.

(d) Warm school lunches for all pupils who do not eat warm lunches at home.

Society should not pauperize any home or child, but society for its own welfare should prevent by every possible means malnutrition in growing children. The warm lunch is necessary to the health of every child. The school lunch, as an illustration of principles of nutrition and as an object lesson, is the most effective means of educating the school child, the home, and the community in better ways of selecting and using foods.

This is only one item in the program of health instruction which constitutes one of the essential aspects of the school as a health agency. No subject in the school curriculum is of more fundamental importance than health instruction. At the same time, no subject is more neglected and, even when attempted, more ineffectively taught.

Health education, like moral education, involves not only a scientific foundation of facts and principles combined with an art of human conduct, but there is also needed special provision for motivation to furnish convincing and compelling reasons to bridge the gap between theory and practice; between knowledge and conduct.

The values of health information are not as readily translated as many other forms of knowledge into terms of economic benefit or other conventional forms of self-advantage. The success of health teaching depends especially upon an early putting into practice of ideas gained.

Effective health instruction depends in part upon the following:

(a) Inculcation of health habits affecting the pupil individually and in relation to home, school, community, and the State.

(b) Instruction in facts, principles, and motives which will provide the best basis for intelligent and effective action.

(c) Greater emphasis upon health than disease in the program of health teaching.

(d) Greater emphasis upon social than upon personal or individual aspects of hygiene.

The child is and should be more interested in the welfare of others than of himself. He will get the best idea and habit in the care of his own health if he believes it important for social service and efficiency rather than for personal safety or satisfaction.

(e) Systematic study of human anatomy and physiology is neither necessary nor desirable as a preliminary or accompaniment of health instruction. This has been a common error in the past. None but the mature mind (and for professional purposes) is capable of, or benefited by self-analysis; by the study of one's own bodily structure and functions. Very little of anatomical or physiological instruction (and this only incidental) is needed for successful health education in our public schools.

There is another phase of health teaching regarding which much difference of opinion exists. Apparently the judgment of the best authorities in the United States to-day does not support the proposal for direct instruction regarding sex hygiene in the schools. Public opinion is not educated to the point of acceptance of this part of a school program, and teachers are not widely and thoroughly enough trained to do the important but difficult work in this field. Serious-minded people must agree, however, that education to prepare the children for responsible parenthood must sooner or later be provided. The two factors in this problem which may be accepted at the present time by even conservative people are:

1. That the teachers should be more comprehensively and thoroughly trained to understand all aspects in the lives of the developing children under their care.

2. That parents should be better prepared for their own part in the education and guidance of their own children.

It seems desirable that our schools should, then, seek more adequately trained teachers as rapidly as the supply will permit, and, further, that the schools should

undertake as much as possible of the program of the education of the home and the parents. A very important part of the health work of the school will depend upon the extent to which the schools reach the homes and influence the parents of their pupils.

There are many reasons to support the idea of parent-teachers' associations, which represent at the present time the best developed form of social organization for bringing the home and school into close contact and cooperation.

The health influence of the school may be further widened through cooperation with other agencies and organizations of the community. In health matters the closest cooperation between the schools and the health authorities are, of course, always necessary, particularly with reference to the control of communicable diseases. In both city and country a considerable number of our schools have been able to work successfully with the antituberculosis societies, which are doing in many parts of our own land most important and effective work.

The best form of public health organization for rural schools seems to be that which takes the county as a unit. There are several county organizations in various States doing admirable work, a part of which is directly related to the administration of the schools.

Another form of voluntary organization which gives promise of important assistance and cooperation in the health field is represented in type by the Bureau of Welfare of School Children, in New York City. This bureau devotes most of its attention to the health problems of the school children. By investigating conditions in the schools and health conditions of the school pupils themselves; by issuing reports following such investigations, and by making recommendations to the city authorities having control of appropriations, this organization points the way along lines of new work which seem needed, and of improvement of methods already in use.

From the experience of this and other similar organizations, it is evident that every community, whether in city or country, would be greatly benefited by independent voluntary organization of intelligent people who may, by reports and recommendations, help to advance the cause of social welfare, particularly in health fields, more rapidly than would otherwise be the rate of progress. The leadership, assistance and advice of such organizations may increase very markedly the efficiency of the school as a health agency. The schools interested in such work may obtain to-day much valuable information in the way of reports and pamphlets from the United States Bureau of Education, from the United States Public Health Service, from State and city boards of health, and also from various independent voluntary organizations.

Another fundamental health feature is the school environment. The schoolhouse and surroundings should be sanitary and attractive. They should be healthful not only when built but also in their maintenance and use. A model school fallen into neglect may be far less salutary in health influence than a cheap, makeshift building well cared for. The schoolhouse should be as sanitary and healthful in all essential particulars as the best home in the community. Further, it should be pleasing and attractive in appearance, in furnishings, and in surroundings, so that the community as a whole may be proud of it; so that the pupils and teachers may receive pleasure in attending school and in caring for and improving it. Healthful and attractive schools are absolutely essential to the physical, mental, social, economic, and moral well-being of the children and teachers, and to the life and welfare of the Nation as a whole. Such schools are powerful health agencies, serving as examples of sanitation to all who see them, and affecting healthfully pupils and teachers and all others who come within their influence.

In the United States the city schools, judged from the standpoint of health and also in other respects, are far superior, on the average, to the schools in the small towns and in the country. The rural schoolhouse in this country is relatively the worst, the most insanitary, and inadequate type of building in the whole country, including not only buildings used for human beings but also those which house domestic animals.

We have, however, many beautiful and sanitary schools in city and country. Rapid improvement is being brought about by repair, reconstruction, and replacement of unsatisfactory and unworthy schools. Several States are stimulating improvement by school surveys, by standardization of schools, by condemnation of poor schools, and by rewarding in various ways schools superior in type.

The last element in this category of factors involved in the influence of the school as a health agency is in some respects most important of all. If advantage is to be taken of the opportunities offered, and if the responsibilities for health service are to be adequately met, the teacher must be thoroughly trained and equipped for the task. It is important that the teacher should be healthy—a helpful and inspiring example in this whole field of health influence—and intelligent and wise with reference to the wide program of education.

Teaching is to-day an extrahazardous occupation in its effect upon the health of those engaged professionally in its work. The death rate among teachers is not exceptionally high as compared with other occupations. The morbidity or ill-health rate, however, is excessively high, particularly in the field of nervous disorders. The work of the teacher, both in Europe and in this country, is exceptionally fatiguing for many reasons. Thirty per cent of the teachers, in an investigation of teachers' welfare in New York State, testified that the condition of health is not so good as when they began to teach. A part of this deterioration must be attributed to the effect of the occupation in which they are engaged. The following factors of improvement seem advisable in relation to this problem:

(a) The teachers should be more carefully selected, partly with reference to health qualifications, and they should be more adequately trained, so that they may direct their own lives more efficiently and through their better knowledge of health laws fulfill more satisfactorily their obligations in the schools and in relation to their pupils and to the communities in which they work.

(b) Society should provide more favorable conditions for the preservation of the teacher's health and for the improved efficiency of the teacher's work.

The possibilities of enlargement and improvement of the school as a health agency appear not only fascinating but limitless.

The significance and value of the work to be done makes the demand for constructive advancement imperative.

No factor related to fundamentals in public education or promotion of national welfare seems more important or more promising.

EDUCATION IN CIVILIZATION IDEALS.

Mr. Milton Fairchild, chairman of the executive committee of the National Institution for Moral Instruction of Children, Washington, D. C., then presented the work of that institution for the development of character education as a phase of public education. It is incorporated for special research, and has a board of directors composed of professional educators and representatives from the general public, with many collaborators. It is putting through the "national \$5,000 morality codes competition," with 70 selected writers, at least one from each State in the Nation, in order to get a set of children's codes of morals which will reveal intelligent public opinion as to the moral ideas which ought to be inculcated in the minds and hearts of the children of the United States of North America. Advice is asked from citizens of other countries. There is a body of "civilization ideals," which is the result of experience, in loyalty to which all the children of all the Americas should be brought up, in order that there may be a broad and solid basis for national life and for international understandings and sympathies. The institution will follow this study of moral ideas by a "national \$20,000 character education methods competition," in which over 400 professional educators will take part, to determine expert opinion as to the best methods of character education in public schools, and then will institute a series of school experiments to prove what methods succeed in getting results

in character development. A body of corresponding associates is being organized that the experience of other nations may be accumulated and made available.

As an aid to the morality code writers, a school character chart has been worked out, which shows the scope of the completely developed character and the range of application to practical life which morality has. The "children's morality codes" are to embody completely the childhood morality to be inculcated, and are not to be merely well worded wall cards of fine sentiment.

A scheme for grading character development has been attached to the "character chart," in order that a diagnosis of any particular child can be made as an aid to determining its character education needs. This list of virtues is still under revision, and will be used when considered perfect as an index to the morality codes when published.

Strength.	Weakness.	
		<p align="center">THE CHARACTER OF THE PERFECT HUMAN BEING.</p> <p>Intellectual character, needed for wise thinking:</p> <ol style="list-style-type: none"> 1. Earnest, not trifling. 2. Sincere and open-minded, not diverted by personal interests. 3. Discerning, not superficial. 4. Alert, not indolent. 5. Accurate, not indefinite. 6. Useful, not merely interesting. 7. Inventive and constructive, not lacking initiative. 8. Rational and judicious, not over emotional, hysterical, or melancholy. 9. Thorough, not illogical. 10. Keen perceptions, not unobservant. 11. Retentive memory, not forgetful. 12. Inquisitive, not lacking desire to know.
		<p>Working character, needed for doing useful work:</p> <ol style="list-style-type: none"> 1. Purposeful, not led merely by likes and dislikes. 2. Teachable, not stubborn. 3. Cautious, not heedless. 4. Ambitious, not self-satisfied. 5. Persistent, not vacillating. 6. Industrious and energetic, not lazy and dilatory. 7. Attentive, not careless. 8. Decisive, not procrastinating. 9. Progressive, not opposed to change. 10. Thrifty, not wasteful. 11. Artistic, not slovenly. 12. Adaptable, not slow to fit into new surroundings. 13. Executive, not haphazard.
		<p>Personal character, need for doing right by oneself:</p> <ol style="list-style-type: none"> 1. Thoughtful, not merely impulsive. 2. Influenced by high ideals, not content with low standards. 3. Conscientious, not lawless. 4. Independent, not suggestible. 5. Self-controlled, not weak. 6. Refined, not coarse. 7. Self-respecting, not dissipated.
		<p>Social character, needed for doing right by others:</p> <ol style="list-style-type: none"> 1. Genuine, not affected. 2. Honest, not thieving nor disposed to cheat. 3. Truthful, not given to lying and deceiving. 4. Honorable, not sneaking. 5. Just, not unfair. 6. Harmonious, not wrangling. 7. Forgiving, not vindictive. 8. Disposed to trust others, not suspicious. 9. Sociable, not exclusive nor snobbish. 10. Loyal, not treacherous. 11. Pure, not lewd. 12. Courteous, not rude. 13. Tactful, not brusque nor priggish. 14. Generous and sportsmanlike, not stingy nor jealous. 15. Public spirited and patriotic, not selfish. 16. Respectful, not impudent nor flippant.

la de 12 o 13 años. A partir de este momento el crecimiento vuelve a acelerarse bruscamente hasta que el niño cumple los 14 o 15 años.

En cuanto al peso, sus variaciones siguen una ley análoga; sin embargo, en los primeros años, y hacia los 15, la talla aumenta mucho más que el peso; pero, a partir de esta última edad, la talla, que ha llegado cerca de su máximo, crece lentamente hasta los 20 o 30, mientras que el peso aumenta en proporciones considerables.

Estas crisis de crecimiento van precedidas y seguidas de un largo período de calma: parece que el organismo se prepara para dar esos saltos poderosos, y que, después de tan grandes esfuerzos, agotadas en gran parte sus energías, se entregara a un descanso reparador.

La mayor o menor capacidad de los niños para el trabajo mental, se encuentra forzosa y naturalmente relacionada con el mayor o menor esfuerzo del organismo para acrecentar la talla o el peso del cuerpo. Es evidente a priori, y lo comprueba la experiencia, que, si el organismo gasta la mayor parte de sus energías en el desarrollo corporal de los niños, en las crisis de crecimiento, tiene que sufrir una paralización momentánea, o disminuir considerablemente, el esfuerzo dedicado al trabajo intelectual: la energía del crecimiento y de la mente se encuentran, pues, en razón inversa una de otra. En los períodos de calma del desarrollo de la energía física, los esfuerzos del organismo quedan disponibles para el trabajo psíquico.

El conocimiento de estos hechos es de suma importancia para el educador, pues, si no los toma en cuenta, se expone a que sus esfuerzos resulten malogrados, y, lo que es peor aún, a violentar la naturaleza de los niños exigiéndoles un esfuerzo que no pueden hacer, a que odien la escuela y el estudio, y a producir en ellos un espíritu de rebelión contra la disciplina de la escuela. Por eso, cuando el maestro observe que sus alumnos demuestran indiferencia por el estudio, que son desatentos, o que están inquietos, como si la permanencia en clase fuera un martirio para ellos, debe reflexionar y buscar la causa de esas anomalías, que pueden estar en la deficiencia de sus métodos de enseñanza, en la ilógica distribución del horario, en su carácter poco afable, en su incapacidad para atraer el respeto y la consideración de sus alumnos, en las malas condiciones higiénicas del aula o del mobiliario, etc., y, sobre todo, pensar si todo ello no depende de que los niños se encuentran en alguno de los períodos correspondientes a las crisis de crecimiento.

La primera crisis de crecimiento coincide con el ingreso del niño a la escuela primaria, a los 6 o 7 años de edad; la segunda, a los 14 o 15 años, con la época en que los educandos se preparan para el ingreso a la universidad o empiezan los cursos de la enseñanza secundaria.

Segundo punto.—Una ley de asistencia obligatoria a la escuela primaria, es indispensable en todo país de instituciones democráticas, y así lo han reconocido las sociedades modernas que fundan su independencia y su libertad, su progreso moral y material, en el mayor valor intrínseco de cada uno de sus componentes; y se ha reconocido que ese mayor valor depende, en gran parte, de la extensión que abarque la obra de la educación común.

Pero, no basta dictar una ley que establezca la obligación escolar, si no se adoptan previamente todas las disposiciones necesarias para que sea fácilmente cumplida; y, por desgracia, son muchas las causas que impiden que todos los niños en edad escolar concurren a recibir los beneficios de aquella obra, no obstante las penas que se establecen para castigar a los padres de familia que no cumplen con la ley, penas que serían injustamente aplicadas en muchos casos y que, por eso mismo, no llegan a hacerse efectivas.

Las causas que impiden el cumplimiento de la obligación escolar, pueden ser muchas: la falta de escuelas suficientes o su mala distribución en el país; la necesidad en que se ven muchos hogares pobres de utilizar desde temprano los servicios de sus hijos para que los ayuden a sostener la familia; la avaricia de algunos padres de familia que sin tener absoluta necesidad del trabajo remunerado de sus hijos pequeños, los

obligan, no obstante, a desempeñar tareas que produzcan ingresos de dinero en el hogar; la indiferencia de muchos padres que no dan valor alguno a la instrucción elemental de sus hijos; la falta de medios para vestir y calzar decentemente a los niños a fin de que puedan asistir a la escuela, a pesar de la buena voluntad de los padres para que concurran a ella.

CONCLUSIONES.

Relativa al primer punto.—Será obligatoria la asistencia de los niños a la escuela primaria elemental, desde la edad de 8 años hasta la de 13.

Relativas al segundo punto.—(a) Fundación de escuelas gratuitas en cantidad suficiente y bien distribuidas por todo el país, de modo que nadie pueda alegar la falta de ellas en cada distrito, y de fácil acceso para todos los niños avecindados en el mismo.

(b) Prohibición absoluta, bajo penas severas, de que los padres de familia utilicen los servicios de los hijos que están en edad escolar, durante el período del día en que funcionan las clases.

(c) Duración de las clases: 20 horas semanales como máximo, distribuidas entre cinco días hábiles.

(d) Determinar para cada localidad, de acuerdo con los usos y costumbres de cada una, que el funcionamiento de las clases sea de mañana o de tarde.

(e) Prohibición terminante, bajo penas severas, de que los dueños o jefes de talleres, fábricas o empresas de cualquiera naturaleza que sean, utilicen los servicios de los niños en edad escolar durante el período de las clases.

(f) La creación de "Sociedades de auxilio escolar" constituidas, en cada distrito, por las personas pudientes de la localidad, con el fin de arbitrar, en forma permanente, los recursos necesarios para vestir y calzar a los niños pobres, así como también para facilitarles los textos y útiles escolares que el erario público no pueda suministrar.

(g) Organización de una policía escolar encargada exclusivamente de descubrir a los niños que, estando en la edad escolar, no concurren a recibir los beneficios de la instrucción.

The CHAIRMAN. By a process of elimination this brings us to the last paper on the program. I had hoped that perhaps the program would be long enough without this particular paper. I was asked to prepare a paper on the subject of special education for the city child. That subject as it stands is so very large that unless one were starting out to write an encyclopedia it would hardly be worth while to attack it at all. I have confined myself to a discussion of the machinery that seems to be necessary for the maintenance of the city school system. This is a discussion that falls largely within the sphere of city administration, an unpardonably dry and forbidding subject, by way of preface.

PROVISION FOR THE EDUCATION OF THE CITY CHILD.

By ERNEST C. MOORE,

Professor of Education in Harvard University.

As the well-being of their people is the sole object of their existence, the republics of the Western Hemisphere have a lively concern for public education. Their care for the instruction of all who dwell within their territory is due not merely to the con-

sideration that education is the means by which the republican form of government preserves itself but rather because it is their philosophy that life without enlightenment and understanding is merely brute life. They exist to make man free—not free politically only but free in the larger sense. They give of their bounty to the coming generation that their citizens may not be in slavery to ignorance, to superstition, to despotic social conditions, to unchecked impulse, to the tyrants of the neighborhood or of the nation. They realize that education is the sole and only road to national freedom, not because it will make those who receive it adherents of the government which provides it, but because it offers the only means of freeing the citizen from antisocial tendencies and making him master of himself, and until he is master of himself the free state which he helps to create can not endure. The education by which they build their continuing freedom is not therefore a means to that freedom; it itself is that freedom, that liberal and unconstrained spirit of which self-imposed laws, popularly selected officers and a system of courts responsible to the people are but functional expressions. This education does not exist for the state; the state exists that it may be. For government, as well as all the other institutions of social life, exists that folks of a certain kind may be brought into being. Free citizens make free governments and keep them free, but they also make free agriculture, free industry, free commerce, free science, free art, free literature, and a free spiritual and social life. The interest of our Governments in maintaining public education is not merely that of providing a kind of insurance against the destruction of republican institutions. It is that, but it is very much more than that; it is nothing short of the development of the life of intelligence in every town and countryside of this western world.

Our particular question is, What are the agencies which must be created to perform this service in cities? Much depends upon the way the city answers, for it is a commonplace that our cities lead the enterprise of the nation to which they belong; that they are the maelstrom of struggle; the forcing house of progress. They tend to standardize values and to set the pace for the striving of the entire people.

The last century witnessed a rushing of the population of the earth to the great centers. No country was quite exempt from this cityward movement. In 1910 the urban population of the United States was 46.3 per cent. At present it is very nearly 50 per cent. Nearly or quite half of the population of the earth now dwells in cities. Through their city schools, therefore, the nations must not only shape the conditions of their own persistence in being but must enfranchise a large proportion of their people. It has frequently been pointed out that the task of the city school system is inherently harder than the task of the village and country school. The farmer's child or the artisan's child in the village learns certain lessons and can not help learning them, just because he is fortunate enough to be born in conditions where the relations of men to nature and to each other are self-evident. He sees all the men about him at work and very early develops a keen realization of the fact that without work one can not eat. He becomes an unarticled apprentice to his father's trade almost as soon as he can walk. Public opinion in the little community, in which everyone knows everyone else and talks much about them, draws very sharp lines about the virtues and holds him very strictly to a narrow path. The lazy man, the good for nothing, the drunkard, the reprobate, he very early learns to distinguish from the approved members of his group. Man's real relation to his fellows he can not escape from learning. No more can he escape from learning man's relation to the things of nature—the soil, the crops, the trees, the rain, the seasons. He takes to school a large fund of very genuine knowledge. His daily out-of-school duties keep his knowledge growing constantly and contribute significance to his school lessons. He lives in an unlittered world of wide horizons full of interesting and beautiful objects, with plenty of room to play and range in. He is surrounded by hard-working people who till the soil for a living and must plan their work from season to season.

They know few pleasures and possess few luxuries. In this environment he is not apt to develop false values. He grows up among real things and real folks. It was not for nothing that Rousseau took Emile to the country. Its schools may be poor, but from the country itself one gets a very real education.

How thin and unprofitable the life of the city child seems beside it. He does not make friends with the trees or the brook or know the grass or the wild flowers. He has never dug up the earth or planted seeds and waited impatiently for them to come up. He can not fell a tree or cut it into firewood. He has never learned that all men live by work. Indeed, he sees so many of them getting their living by their wits that that is apt to seem the best way to him. He does not know the name of the man who lives next door and learns few lessons of right or wrong conduct from him. He has little room to range in, no living things to tend, no daily tale of chores to do. The older people who are about are too busy with their own affairs to answer his questions or train him in the rudiments of their trades. His environment does not teach him much. He is left largely to his own resources. If his parents are more than usually solicitous for his welfare, they will provide an artificial environment in which many of the shortcomings of his natural environment are overcome. But the agency which is peculiarly charged and commissioned to do this is the public school. It exists in the midst of the crowded city to assure to the young an opportunity to grow up in fuller and richer surroundings than those which the city tenements provide. It furnishes a playground where boys and girls may perform the 10,000 experiments in cooperative endeavor which make play so valuable a part of the training for life. It must have grounds and equipment to teach these lessons. In its way it provides a knowledge of growing things, and at its best it maintains school gardens, where seeds are planted and the crop tended. It provides workshops, with elementary lessons in the use of tools, the nature of materials, and the significance of human labor. It tries by excursions to factories and farms to give its pupils a first-hand knowledge of the work that is going on about them. It cares for their bodies with scientific solicitude and, in addition, it teaches them all the lessons with which the best country or village school finds it necessary to supplement the education which life in the country gives the country child. When looked at in this way, it will be seen that the city school undertakes a vast responsibility. Because it attempts to develop a real appreciation of social life apart from the basic conditions of that life, the problem of the city school is the greatest and most difficult of all.

There are, to be sure, certain credits to be placed on the other side. If the city obscures the view of fundamental things and relations it does usually give great attention to providing an artificial environment in which these lessons may be learned. Those who dwell in cities value the education of their children and are both willing and able to pay for it. Opportunities for natural education are so restricted that the need for artificial or specially provided education is self-evident. The city therefore becomes the home of scientific knowledge and of skill, while the country, being less conscious of problems and difficulties, tends to repeat its goodness of the day before without very heroic efforts to improve upon it. The cities must and do provide better schools and stimulate the country to supplement its superior natural education with more and better conscious training. But as the city must place a larger reliance upon the school than the country does the problem of providing education in cities, is much more acute there. It takes many forms. The first, and perhaps the greatest of all since other problems connected with the schools can not be solved until it is answered, is how shall the schools of the city be administered.

Is education one of the public interests of the local community which should share alike with all the other local interests? Should it be regulated and administered by the local officers who control the police, the water supply, the streets, the markets, the health regulations, and the finances of the city? When the city's budget is made and the public money is distributed to the several departments, should the claim of the

schools to support be regarded as on a parity with the other activities of the city? Or should the schools be regarded as a preferred creditor of government and the claim of education as a major claim upon the community?

Ever since the days of Plato thinkers who have investigated this subject have with one accord insisted that education is the chief means to the good life which the city and the State exist to bring into being. That its claims must not be put into one bag with the other interests of local government and administered and financed by officials who regard it as of no more importance than the interest of docks and streets, fire protection, and building ordinances. That the welfare of the young is so preeminently vital to the Nation or the State that it must create and maintain special agencies for safeguarding their interests. Like the administration of justice and the passing of general laws, public education must be regarded not as a concern of the local government but of the larger community which is the State or the Nation. If a city does not keep its streets clean or in good repair, if it does not build its buildings properly or protect them against fire, if it does not develop a good water supply or provide adequate sewers the harm which results is a local harm; but if it is negligent and indifferent in educating its children, if it administers its schools badly, hires poor teachers, underpays them or enforces its compulsory education laws in a lax fashion the whole State suffers, for the character of a part of its citizens is allowed to deteriorate and it is being weakened through negligence in one quarter. Since the citizens of the State or the Nation are partners in the common business of living together and maintaining the civilization which the State is organized to create, if any part of them fail in that which makes for the welfare of all the whole State suffers.

It is this consideration which has led lawmakers in America to insist that public education is and must be a general, not a municipal affair. It is its intimate relation to the life and well-being of the entire State which has led them to regulate it by general laws not by municipal ordinances and to create special departments of administration and corps of State officers to maintain it, for their desire has been from the first to keep the interests of the children from being exposed to the taint of local municipal politics and to keep the business of the public schools from being mixed up and confused with local municipal interests and business. To the question, then, how can the schools of cities be safeguarded and kept free from the contamination and mismanagement of city administration, the answer is only by the Nation or the State taking the entire responsibility for conducting them, financing them by means of general laws and creating State boards of school officers in each locality to administer them. There can be no doubt that if the people of the larger political community are awake to the interest of the State as a whole in matters of public education they will take this step. But it is not merely for the sake of good and properly maintained city schools that this independence of the school agencies and administration must be insisted upon, there is another reason for making the city schools a part of the larger system of the State or the Nation. They need the oversight of the central government that they may be kept from falling a prey to local indifference, local inefficiency, local factions, and local provincialism, but the schools of the country and of the smaller towns and villages need to be parts of the same system of public education to which the city schools belong in order that they may be stimulated and urged forward and share in the progress of the city school systems.

Any country which regards education as an entirely local matter is certain to have many different kinds of it, varying from the worst to something like the best, but if its localities are bound together to accomplish this work the success of one is bound in some measure to be the success of all of them and the strength of one the strength of all. Mutuality in educational endeavor should therefore be the order, and to be effective it requires that the State or the Nation rather than the locality shall direct the schools. The wisdom and devotion of the whole population is a better safeguard than the wisdom and devotion of each separate locality taken by itself. The people of the

different communities have need of each other, that is the reason why they are parts of the same State, not independent States themselves; and in nothing do they need each other more than in planning and deliberating about the welfare of the young and in stimulating each other to the greatest energy in training them as Aristotle says "according to the constitution."

The city school system is a creation of law. If the law which directs it is uncertain and vague, if it is insufficient and contradictory, the effect is to weaken and confuse the work of the schools. There are cities which spend millions on public education and have only second or third rate schools because they have not seen fit to make the law which governs them clear and definite. They are continually torn by wrangling among officials as to whose function it is to direct the work of the teachers and to make provision for their labors. Perpetual fighting among the officials in charge of the city and of the schools of course disturbs the work of the teachers. That work is peculiarly sensitive to disturbances by such unsettling influences. Where agitation is rife and the status of the school system is not definitely determined the most devoted body of teachers in the world could not overcome the handicap under which they are forced to labor. The ill effect of such conditions is so evident that the first principle of school administration and the most important of all is that the law governing the public schools and fixing responsibility for them must be clear and definite. Even a bad education law, if its provisions are definite and certain, is to be preferred to an otherwise good law which does not fix responsibility but leaves the schools a prey to any official who may seize control of them.

But having created a system of schools under general laws which are definite and easily determined, and entrusted its administration to a body of locally elected State officers rather than a body of officials who are parts of the somewhat irresponsible local government, the welfare of the schools depends in no small measure upon how the board of education or the school committee, as it is sometimes called, systematizes its duties. There is an old saying which reminds us that everybody's business is nobody's business. Directing the schools of a city is a vast undertaking which can not be performed if this, that, and the other board, committee or individual each has a hand in it, and definite responsibility attaches to no one. The school board of a city is a public corporation which administers a great business. I remember that some years ago the auditor general of the Chinese Republic asked how much money the board of education of New York City expended each year, and when I replied more than \$50,000,000, he said, "Why, that is more than the central government of China spends annually." But the real significance of its operation is not to be arrived at by thinking of the amount of money it handles but rather of the number of lives. Those who manage large private businesses have learned that they must organize their work, but city boards of education, at least in the United States, have not all learned this lesson. They sometimes conduct their business as though it were four or five independent businesses in place of one organic whole. Indeed, sometimes we find a separate public corporation, quite independent of the board of education, charged with the duty of building and caring for the schoolhouses, while the board of education conducts school in them. Most of the boards which are elected to administer the schools subdivide themselves into a series of standing committees, each of which performs a certain part of the work of the board almost as though it were an independent board itself. Many boards seem to think that it is their function to make the course of study and themselves direct the instruction and the discipline in the schools. All this makes for confusion.

Public business, if it is to be done effectively, must be organized as carefully as private business is. In conducting the schools of a city the people employ two kinds of officers. Since they can not meet in a town meeting and themselves order school buildings built, and hire the teachers to teach in them, they either elect a board or a single individual to act as their representative in making the arrangements to maintain the schools. This board or representative is appointed by the community to

look after its school interests; it is an agency created not to conduct the schools but to see that they are conducted. It is a lay body, but the actual work of building school-houses, of making courses of study, of selecting teachers and supervising their instruction of the children is a professional labor which can be performed only by those who have carefully fitted themselves by long years of study to perform it.

The board of education or the agency which takes its place is a committee of citizens chosen to represent the people in seeing that the schools are properly conducted. It is not to do the teaching or the supervising itself but to select the proper persons to do it and to see that they do their work. It has several very definite duties. It must know the school law and protect it; it must thoroughly systematize its work, and to do so it must act as a board in the oversight of all of it, not as a series of more or less independent standing committees; it must treat all the parts of its undertaking as organic parts of one activity, and to do so it must bring them all under the control of a single executive officer or general manager of the schools. As every part of its work has the education of the children for its object its executive officer must be an educator.

The board of education should of course clearly understand that it is created primarily not to run the schools cheaply, and so keep down taxes for its community, but to invest the money of that community in the education of its children. That the community is interested far more in its success in educating the children than in any false economies which it may achieve. It must shape the policies which are to be carried out in the school system. It must make by-laws to control its work, and it should systematize it so completely that the superintendent and each of his assistants and each principal, each teacher, each clerk, and each janitor in its employ will know quite definitely what his duties are and to whom he is responsible for his instructions and by whom he is to be held accountable and to whom he is to make complaint when things go wrong. The board of education should devise and require a system of reports from its subordinates which will keep it in touch with their accomplishment of its work. One of the chief functions of the lay body in charge of the schools is to sit as a court of appeal to which any difficulty arising out of the conduct of the schools may be submitted after it has first been brought to the proper staff officer and he has failed to adjust it satisfactorily.

The greatest responsibility of the lay authority in charge of the system is to select the educator who shall act as its executive officer and general manager of the schools. In a sense everything that is to be done depends upon him; and, as Plato says, "He who is elected, and he who is the elector, should consider that of all the great offices of state this is the greatest." It is this man who must see the vision of the days which are yet to be and of the part which the young people through his nurture are to take in them. He must have the pattern of aspiration in his soul that he may guide them to it. All science and all philosophy would not provide too rich a training to fit him for his task. The nature of education must be his especial study. He must devote his life to develop the ideals of the nation and of humanity at large in the person of each one of the students in the schools under his care. His supreme interest in the children will determine his selection of the teachers who are to assist in this great task. Political considerations or religious or geographical considerations will not influence him in choosing them. His one requirement will be that they are fitted by interest, by education, and by skill to be the guardians of the generation which is entering upon the control of human affairs. He will select them because they are proper coworkers and for no other reason and he will strive to secure for them such compensation as their work requires and deserves.

A staff constituted in this way, laboring in a city whose educational interests are kept free from the encroachment of local political activities by being directed by the laws of the State as a part of the work of the State, and carefully organized and guided by a lay board of citizens who separate their functions quite clearly from the functions of the trained director and the trained teachers whom they employ, will deliberate

together about courses of study and methods to be employed in the instructing of the children. They will unify their work because their purpose is unified and they will labor harmoniously to the common end for they are one in purpose and spirit. Fortunate indeed is that city whose children shall be reared by such a company. This good fortune, however, is not difficult for any city to attain. It has but to see that from the standpoint of the State and of civilization education is the one thing needful and then to provide such an organization of its school interests as will separate them entirely from local political considerations and make possible the systematizing of all its work to the sole end of ministering to the needs of its children.

The CHAIRMAN. This brings the formal program to a close. Does any one care to ask questions or discuss any point that has been made?

Mr. ROSENBLUTH. I can speak from the standpoint of one who has received most of his educational ideas in a reformatory, since I have studied many of the inmates individually who come into a reformatory. I did that with the definite end in view of directing them. This has led me to think of certain things. I had hoped that perhaps in this paper some of the differences between country training and city training would have been pointed out. With the economic organization of the city supplemented with sociological organizations and child labor laws and other legislation, we deprive the child in the urban community to-day of all the advantages of undertaking responsibility. In noticing the difference between the country and the city person as they develop there is no question but that the real difference is in their attitude towards responsibility and their success in meeting it. You notice that for instance in the attitude of a person living in the city. The employer says he is not worth much, and that it will take him a year or two to make good. The country person, however, can fit right in. It seems to me it is due to nothing more than to the fact that the country fellow assumes responsibility as he is growing, and it is not because, as is generally advocated, he has learned how to plow, but simply because he has had responsible tasks to do, and if he did not do them he got the consequences. I am not advocating going back to child labor or to similar things, but I think the advantages are in the country. It seems to me that there should be introduced in the city municipal chores to take the place of the country chores which have developed the character of the country boy.

Character is meeting responsibilities successfully and cheerfully. To successfully meet these responsibilities one has to successfully experience and undertake lesser responsibilities. These responsibilities undertaken by a child must be based on responsibilities that he has had to face as he has grown intellectually and physically. Now if you overburden him you get bad results, and that is the reason we passed child labor laws. To-day more than at any other time city children need responsibilities, and I advocate that they be given certain responsibilities to be undertaken for the municipality. Personally I can not see any difference between the two extremes of a young child sweeping the streets of the residential section or what

used to be an area as large as a house. Some children could be cutting the grass in the park. Take the high school and city colleges where they have well-equipped laboratories. There could be a very successful inspection of weights and measures. Things of that kind could be done which are never adequately done by paid labor. Why could not duties be required of the child in the school system? As far as the application of the idea goes I do not think there is any single function of municipal activity that you could suggest at one place or another that has not been undertaken successfully by volunteers doing the work as such, not realizing they are contributing something very definite. That has resulted in much good to the community. I refer for instance to the junior New York City police. Col. Waring had a street-cleaning squad. They are organizing now for volunteer park work. The Boy Scouts have any number of services of a similar nature. I think that every one should do an hour or two's work outside of school hours. I am not considering strictly what you would call manual training. I think that some task, some active, definite task, should be assigned which would enable the pupils to develop character and to do useful work regularly at the same time. I think what we really need in the city is to supplement school work with successful child training.

The CHAIRMAN. This brings up a very interesting subject for discussion.

Mrs. C. C. RUMSEY. How far does the Gary idea apply to this?

Mr. ROSENBLUTH. That is only organized play.

Mrs. RUMSEY. His idea primarily is work, study and play. Work is only instruction, and not work.

The CHAIRMAN. Such as military drill.

Mr. ROSENBLUTH. I was trying in this case to give a broad conception of municipal chores or civic services. My way of putting it was municipal responsibilities, granting that every citizen owes it to the State, or owes it to the community, to be available for defense of his rights. I believe it would fit him for military drill. I really think our high schools are very efficient in that, and it would fit right in with this notion. This is a notion that is also capable of expansion. It simply requires that the services to the community should be identified with the type of community in which the child exists, so that naturally if it were in connection with farming, as farming is organized in single units, it would be to him in single units. It is the real test of philosophy what makes the country training successful and the city training unsuccessful.

Mr. WOOD. I have a feeling that the work of the Gary system provides a little more than the speaker submits for actual working equipment. I have seen work in a school where the lunch room was actually carried on by the pupils of the school in doing the work of

domestic science, cooking and so on—a lunch room demonstrated on a business-like basis; and I have the impression that either in the Gary or some school of the Wirt type they do use the results of manual labor in the actual repair and construction of materials, of school furniture, and they are given economic recognition for that. They print some of their papers on their own printing presses and do type-writing and perform other activities.

Mr. ROSENBLUTH. I think I can answer back in this way. In the first place it is not a definite service, or, put it this way: They do the work to-day and some other pupils do it to-morrow. I am speaking of building schoolhouses and things like that where they can conveniently do it and make it practicable, but the emphasis must be on the instructional value, not on the fact that they do piece work, carpentry this week and next week work at something else. Any outside person has got to do a service continuously and regularly and of a high standard. There is a difference in my mind between work and instruction. The emphasis in the Gary system is on the instruction.

Mr. Wood. I think it should be.

Mr. ROSENBLUTH. I do not say it should not be instruction. I say a certain amount, an hour or two a day, is really what should be done, and the main thing is to have to do that thing. That is what the development of character is, namely, to have to do a thing and to have to do it well.

Mr. WRIGHT. The best example is at the normal school at Fitchburg, Mass. The carpenter has his gang of boys who are carpenters, and who do the building work. If some fellow breaks a round in a stairway one of this gang mends it. If a rail gets scratched and needs to be varnished the boys scrape it off and revarnish it. An effort is made to make the task a reality. These tasks are not merely the copying of a set of forms, as in most normal training schools, but real tasks that contribute to the community and to the normal school itself. The effect is very good indeed.

Mr. MOORE. I should like to raise one more question. Mr. Rosenbluth said a moment ago that what is socially profitable makes for character. I wonder if it may not be drudgery—and drudgery does not make for character.

Mr. ROSENBLUTH. What happens when a boy leaves school? He has to work then, and school is only a training for life. The answer is that what everyone does cheerfully and successfully, meeting responsibility, makes for character. That means earning your own living because that is the first thing a person has to do, to earn his living and to be productive enough to support himself and then to support a family later on. To be cheerful in meeting and discharging all these obligations requires, I think, a philosophy that can only be induced by successfully doing it. If you have got a training and are used to it there isn't any such thing as drudgery.

There should not be any useful thing that any broadgauge man is not willing to do and do cheerfully if he has to.

Mr. MOORE. I think the difference between drudgery and work may be stated thus: Work is doing something you see the value of, while drudgery is what you have to do without seeing the value.

Mr. ROSENBLUTH. It ought to be very easy to induce a boy to acquire the social consciousness; to insist during the very earliest days of his schooling that all community services are of value.

Mrs. RUMSEY. Would not any municipal chore be different from the country chore which has necessarily to be done?

Mr. ROSENBLUTH. That is the work of the so-called vocational school. The very fact that you have the city makes it more complex. There is no trouble in finding the work.

Mr. FAIRCHILD. What would you do with the boy of 15 years who will not work?

Mr. ROSENBLUTH. What would you do with the boy of 15 years who will not do his lesson? Most cities have special classes with extra personal instruction. I organized special classes and brought this boy closer to the person in charge of the work.

Mr. FAIRCHILD. What would be your special class, for example?

Mr. ROSENBLUTH. I can think up any number of good jobs. You come into the reformatory and we will show you.

Mr. FAIRCHILD. But take the city boy on the park bench who won't cut the grass.

Mr. ROSENBLUTH. Well, you have authority there. You do the same with him. You send him to a special school. If you don't send him when he is 15, you send him a year later.

Mrs. RUMSEY. How many reformatory boys are normal boys and how many are feeble-minded?

Mr. ROSENBLUTH. That is very much disputed. It depends on your viewpoint. I always answer that question this way, that there are less than 5 per cent who can not be trained well enough to hold a job outside—a job that they could work at and would be content to work at outside. I think we have gone too far in what we call feeble-minded cases. It doesn't make much difference so long as a fellow will work and live on the proceeds of his work.

Mrs. RUMSEY. That is just what a mental defective can not do.

Mr. ROSENBLUTH. There are less than 5 per cent in the reformatory who can not make their own living outside. You may have to find some of them the right place. There may be only exceptional places they can make good in, but so far a good many of the fellows called feeble-minded could, in my opinion, simply with a little pains, be placed outside. We have placed a good many of them in such positions and they are still outside keeping out of jail, and one of our tests of civilization is our ability to keep out of jail.

Adjournment.

SESSION OF SUBSECTION 3 OF SECTION IV.

GEORGE WASHINGTON UNIVERSITY,
Wednesday morning, December 29, 1915.

Chairman, EDMUND J. JAMES.

The session was called to order at 2.30 o'clock by the chairman.

The CHAIRMAN. The first paper on the program is by Dr. William Henry Carpenter, of Columbia University.

Mr. CARPENTER. My paper partakes very largely of the materials of the familiar feast, but it has seemed to me that this is the proper place, on account of the ultimate publication of the paper, to rehearse again the conditions of the graduate school and its position in the university, in the hope and expectation that it may, at least to the South American people, throw some little light upon a question in which they apparently have a great deal of curiosity at the present time, namely, the organization of the American university and the place in it of the graduate school. I would preface my paper with these few remarks in order to disarm an expectation of anything in it that is at all new or strange.

FUNCTION OF GRADUATE SCHOOLS IN THE UNIVERSITIES OF THE UNITED STATES.

By WILLIAM HENRY CARPENTER,
Provost of Columbia University.

The university in the United States is in its organization distinctly an American product that has shaped itself in a special way to accord with a new environment and to serve the peculiar purposes of new conditions. The term "university," in point of fact, is variously used and has no world-wide and specific connotation that definitely describes the institution that bears it. Wherever it is used it inevitably means, of course, an organization whose purpose is education; but it represents in the end a wide variety of organizations that carry out their educational purposes in widely different ways.

The university in England, as represented typically by the old foundations of Oxford and Cambridge, is a group of separately endowed undergraduate colleges—in Oxford 21 and in Cambridge 17—all under a central educational administration.

The universities of the rest of Europe are of one general type. They are institutions of graduate rank, organized under various faculties, either law, medicine, science, and letters, as generally in the Latin countries; or law, medicine, theology, and philosophy, which is the typical arrangement in Germany and the rest of northern Europe.

What a "university" is in the United States is more difficult to comprehend in a single definition. According to the report of the Commissioner of Education there are in the United States some 140 institutions of learning that bear the name "uni-

versity." To complicate the matter these American "universities" are of all sorts and conditions in organization, equipment, and standard of efficiency. Many of them bear the title with dignity and propriety; some of them, permitted to use the name by complacent and easy-going State legislatures in new and ambitious communities, do not rightly bear it at all. It is necessary to state this fact baldly in order to justify any statement that is made with regard to the American university, which without this knowledge and by accepting an apparent part as representative of the whole might be weighed in the educational balance and found wanting.

A university in the United States, properly so designated, is in organization an anomalous institution, our own product, as has been said, evolved in the end out of our own conditions, fitted into our own environment, efficient in good measure for our own particular needs. Its present organization is a matter of gradual growth. Like many things American, its first and fundamental conditions were derived from the older countries of Europe. The fundamental idea of the American undergraduate college came from England and our first colleges were English colleges. In the same way the fundamental idea of the university, as that term is narrowly applied to graduate schools, came from Germany, but there is no single university of the German type in America, nor for any reason whatsoever is there ever likely to be.

The American university at the present time is a heterodox educational organization, that has never existed before, but which properly organized is superior to any other for economy of equipment in materials and men, for concentration of educational energy and for the production of educational result. It may very well be that few American universities attain the beatitude of ultimate perfection along any of these lines, but that is not the fault of the idea of organization nor of the ideals that lie behind it. Typically organized and in its most extended development, the American university consists fundamentally of the undergraduate college; of the schools of applied science—engineering in its many branches, chemistry, and mining; of a school of architecture, of art and of music, of medicine, of law, of teaching; in some cases of journalism, pharmacy and veterinary medicine; in rare instances of theology; and in addition to all a nonprofessional graduate school in which are taught along the highest level all that wide range of subjects whose horizon is only limited by the boundaries of human intelligence and where research is undertaken to extend them.

That is the organization and aim of the American university stated in its fundamental terms. It is a great school of carefully coordinated parts, which in its best exemplification presupposes the college for the liberal education which it bestows, but which, interrelated with the college, maintains the professional schools which fit the college-trained man or woman for the skilled activities of life; and then, if such be their desire, offers them the further opportunity in the graduate school of still higher accomplishment in any direction and to any extent that they may have the capacity and the inclination to pursue it.

The advantages of this organization are the close and direct coordination of all the higher phases of education above the secondary school in one institution and under one general administrative management, which definitely obviates a break between the various parts of the educational system, and provides in its centralization and community of effort, without unnecessary duplication, an economy of the teaching force, and of buildings and laboratory and library equipment.

The undergraduate college provides the close articulation with the professional schools that is fundamental, on the one hand, and it forms the necessary preliminary to the advanced instruction in the graduate school, on the other. The presence together, under common general auspices, of the undergraduates of the college, of the students in the professional schools and of the nonprofessional students of the university is not only in many ways a saving in administrative economy, but it contributes to no small extent to a consciousness in the entire student body of the common ends of education; to a community of interest and of effort in the teaching force

of the university in the proper correlation of its work in whatever field that may happen specifically to lie, and to the broadening and strengthening of the whole as an object lesson to the community outside the university gates of the solidarity and importance of its educational effort. I have been thus explicit in describing the organization and intention of the American university as a whole, in order more clearly to point out in its true perspective the position in it of the graduate school and to state intelligibly its particular function. The college and the professional schools in many cases exist alone as separate institutions. My immediate purpose has been to describe the larger and composite organization of the typical university in the United States which has the organized graduate school at its apex and as the end of its educational undertaking.

The nonprofessional graduate school—the faculty of philosophy of the German university—is a fact relatively new in the universities of the United States. Graduate instruction, as such, except in isolated subjects in a few of the older institutions, scarcely existed prior to 1870. After the close of the Civil War there came about in the United States an era of educational awakening, the colleges received a great accession of students, new institutions were founded, and a body of college graduates was at hand larger than there had ever been before in the history of the country. Yale and Harvard were notably the pioneers in this field and early in the seventies both institutions had already systematized work of graduate rank beyond the instruction of the college. A great and, in point of fact, the conclusive impetus to the proper organization of graduate work in the university came with the foundation of the Johns Hopkins University, which began its first instruction in 1876. It arranged its work largely on the model of the German university and adopted in part a German terminology to describe it, and for the first time we hear in an American institution of a faculty of philosophy in charge of graduate work. At the present time all the large universities maintain graduate departments of instruction, under, however, a varying descriptive title. Harvard, for instance, calls its nonprofessional graduate school the “graduate school of arts and sciences”; Yale uses the simple title, “graduate school,” as do Princeton, Cornell, the University of Pennsylvania, and others. Columbia organizes its nonprofessional graduate work under three separate faculties—political science, philosophy, and pure science—all, however, under a single administrative head, with common educational requirements. According to the last report of the Commissioner of Education of the United States there were in 1914 in the 567 universities, colleges, and technological schools covered by the report a total of 216,493 students. Of these 13,094, of which 8,885 were men and 4,209 were women, were registered in the nonprofessional graduate schools.

The academic degrees bestowed in the graduate school are those of master of arts and doctor of philosophy. The master of arts degree is usually acquired at the end of one year's advanced work performed subsequent to the award of the baccalaureate degree, although in single instances two years are required. The degree of doctor of philosophy is usually bestowed on the basis of two years' residence work in the university; in actual practice, however, three years are required in the great majority of cases to complete the conditions of the award of the degree, and in not a few instances this period is prolonged, often for several years, before the candidate has satisfied all requirements, including the submission of the doctoral dissertation which necessarily embodies original research work and in some way is a contribution to existing knowledge. The work of the graduate school, accordingly, is intended to cover advanced instruction upon which is based the award of the master of arts degree, and advanced instruction and research upon which is based the award of the degree of doctor of philosophy. The higher degree may, however, be secured without the other, which does not form a necessary preliminary, although it is frequently taken en route, and in some conceivable cases can advantageously be taken without in any way disturbing the continuity of the work. In 1914, according to the last report of the Commissioner of Education, 2,533 degrees of master of arts were

bestowed by American universities, 1,680 of which went to men and 853 to women. In the same period 519 degrees of doctor of philosophy were bestowed, 446 on men and 73 on women students—a total, accordingly, of 3,052 degrees for the nonprofessional work of the graduate schools. From the apparent emphasis that has been laid upon this matter of degrees in the graduate school it is not for a moment to be supposed that to confer degrees is the end and aim of graduate work in the university. That is not the case in any reputable institution of learning in the United States. The degrees earned by students in our universities are only the outward and visible sign of a certain kind and amount of work accomplished, and in the multiplicity of the various degrees that are bestowed, categorize, outwardly at least, the work that has been done. The intention of the graduate school is to give advanced instruction and to encourage research, not to award degrees. There may be at times degree hunters among the students—men and possibly women who prize the degree attained rather than its content—but even these have fulfilled the conditions of the award of the degree, and in them, too, there must have been left behind by the process some modicum, at least, of the leaven of educational righteousness.

What, then, if this is its organization and general intention, is the function of the graduate school in the university? The graduate school rests, as has been explained, upon the college, upon which it has, in fact, in almost every instance in its historical development been superimposed. The character of the instruction given in the graduate school depends, accordingly, largely upon the character of the instruction given in the college, and the students who undertake this work in their intellectual equipment, their scholarly instinct, and their habits of mind when they come to the graduate school bring with them the inheritance in an altogether preponderating degree of the college. The American college, consequently, is directly responsible to the graduate school for the material with which it has to work, and upon the college depends where the graduate work of the university shall begin, and logically carried out, what shall be its scope.

The intention of the American college is to give to its students the fundamental conditions of what is sometimes called "a liberal education," in other words, its ideal aim is broadly cultural. It is intended in the scheme of education to furnish the necessary equipment of an educated man or woman, whatever shall be his subsequent place in the body politic. Many of its graduates go into the professional schools and through them into the learned professions, law, medicine, architecture, engineering; some of them become the students of the graduate school. The great majority, however, go out directly into the active life of the community and have, as a consequence, completed then and there, as such, their formal education. The college course is, accordingly, not alone the preparatory stage of the graduate school, it is at the same time, and more and more with the development of a system of education, the preparatory stage of the professional schools of widely varying sorts, and it is the ultimate educational stage of an important part of the men and women of the Nation. It is a difficult part to play in an educational system that still lacks a perfect correlation of its parts, and the question may pertinently be asked whether it plays it well. The American college is preeminently that part of the educational system that, to use a figure of the time, is conspicuously on the firing line, and it has been often and at times harshly criticized for its deficiencies in fulfilling the educational ends that it is thought should be demanded of it.

From the point of view of the nonprofessional school the charge that may broadly be made against the college is its diffuseness. It teaches so many subjects that there may only too readily result a lack of concentration in any. It is, nevertheless, entirely possible to obtain in the college as it is organized in our better institutions, whether these are colleges alone or are parts of universities, an education that will serve as an excellent preparation for further work in the nonprofessional graduate school, and doubtless that is all that the graduate school can reasonably require.

The real embarrassment, however, arises, not from the lack of an adequate preparation for more advanced work on the part of the student who has received his training in a good college, but from the fact that not all of our colleges that bestow the baccalaureate degree are equally good. In the absence of a national system of education that has standardized its various stages, the Association of American Universities, whose membership is made up of 22 of the important institutions of the country—half of them privately endowed, half of them supported by the States in which they are situated—has adopted a definition of a college as follows: "An institution to be ranked as a college must have a course of four full years in liberal arts and sciences, and should require for admission not less than the usual four years of academic or high-school preparation, or its equivalent, in addition to the preacademic or grammar school studies."

This, accordingly, is the assumed educational equipment of the student when he enters upon the work of the graduate school, and the material with which that school has to work. In spite of a preparation that apparently lacks homogeneity in purpose and result, the student comes to it with an education in a fair degree commensurate with a reasonable demand for intellectual preparedness; and the graduate school, however uneven from the nature of the American college its material may be, sets up in this way a standard of entrance that insures an approximately reasonable terminus a quo to the instruction.

By far the great majority of the students of the graduate schools are the one-year candidates for the degree of master of arts, who have no intention of proceeding to the degree of doctor of philosophy or to undertake research work. Their desire is simply to extend the period of formal study by another year, but at the same time to narrow their work to a few subjects, which they may continue or begin, as the case may be, under the more specialized conditions of graduate instruction. The task, accordingly, of the graduate school is largely to teach this body of advanced students and still to retain intact its ideals, which above everything else are not only to teach the content of knowledge already at hand, but to promote original research by practice in its particular methods and by stimulating in the mind of the student the desire to undertake it. The graduate school, on account of its material, is preeminently a great teaching school, and largely, no doubt, because of this fact it is an excellent teacher, in this respect far beyond the German university, where teaching, as such, in many subjects is not infrequently overlooked as a fundamental factor of the instruction that is left to the student himself to supply, but to an extent often beyond an intelligent ability to supply it. It is a widespread popular idea that the German university is a place of research alone, but that is far from being the case, and the instructors who conduct research work and themselves are engaged in it are also actively engaged in teaching. What is particularly characteristic of the German university is the spirit of research that prevades the whole; but it is customary, as it is necessary, to continue in the university along broad lines the subject teaching begun in the gymnasium and to begin at the beginning of new subjects that the gymnasium has not taught. The American university is not different from the German university in these respects; it only has a larger body of students who are to be taught along the more advanced lines of instruction, and fewer who are to take the necessary additional time for learning the methods of original investigation.

The subjects of instruction in the graduate schools of the greater universities in the United States cover liberally the whole vast extent of those subjects of human interest which lie above, or, perhaps better, beyond their fundamental aspects as part of the required knowledge for the practice of a profession. There was a time when American students had of necessity to go abroad—and particularly to Germany—to study many subjects for which no provision had yet been made in American universities. That day has long since gone by, and at the present time there is no single

subject that can not be pursued and investigated here. It will always be desirable for the American student to study abroad under some great personality—some leader or investigator who has made his subject particularly his own, whose method of presentation bears peculiarly the stamp of his own individuality, or whose laboratory is equipped to demonstrate in practice his own specific theories, whatever they may be; but the necessity for so doing no longer exists and the number of American students who study abroad is decreasing from year to year. And the number will continue to decrease, on account of the liberality of our university equipment, on account of our eagerness to seize hold of the opportunities of educational advancement, on account of the vastness and importance of the opportunities themselves.

As an end of instruction in the graduate school, and as the formal result of it all, stands the doctoral dissertation. Usually it is concerned with a narrow subject, the mere segment of a wide circle of special knowledge; but however narrow its limits may be, it must embody along careful and logical lines the working out of a new phase of the field in which it lies, and it must contain a definite contribution to knowledge, however insignificant in its relative weight as compared with the preponderant whole that contribution may be. The doctoral dissertation is rarely completed in the two probationary years of actual university residence, and its production frequently extends in this manner the instructional influence of the graduate school. It arises under the direct supervision of the instructor, in the laboratory or seminar under his charge, and it is a stimulus to him, as well as to the student, in the exercise of method which it involves, in the presentation and evaluation of the facts with which it is concerned, and in the required reality of its conclusions. To the student it is of supreme value as a first trial of his wings, and as an encouragement and incentive to further effort. It may be that many doctoral dissertations in an estimate of intrinsic importance, from the fact that they are first efforts are little more than this and are not of supreme value to a waiting and expectant world. They are, however, of supreme value to the man who has written them and whose individual investigations they embody, in that they have fulfilled their purpose to him of a direct object lesson in method and of his capability to use it as a tool in scientific work.

The doctoral dissertations of the American graduate schools have in late years greatly increased in the importance and actual value of their subject matter and in the manner of its presentation. The old inherited idea of the mere collection of counted instances of the recurrence of something or other through the historical record of its history, that turns up in so many of the older dissertations, has disappeared, and has largely given place to the fresh presentation of newly gathered material, that may be, to be sure, old facts presented in a new light. Much more attention is also given to form than was often the case in earlier days. It is doubtless difficult to give an investigation in some of the sciences, as in physics or chemistry, always a distinctly literary form, but many of the doctoral dissertations of the present time are literature that can actually be read.

The function of the graduate school in the university may, doubtless, be readily inferred from its position and its intention in the educational organization of the American university, as it has been described with perhaps a needless amount of detail. Its function is to extend the period of study beyond the college, and to furnish the opportunity to those who desire to take it to concentrate attention upon particular and special subjects beyond an extent that has been possible in the cultural conditions of the college course; to build, in fact, upon the general cultural knowledge acquired in the college a superstructure of special knowledge that the college, from the nature of the case, has made no provision to impart. The graduate school furnishes an incentive and an encouragement to scholarship, furthermore, in subjects, or in phases of subjects, that do not form the immediate content of professional courses whose province is to lead to the acquirement of a knowledge of professional practice;

and truly carried out it should, and does, awaken and promote the desire to extend the boundaries of present knowledge in all such subjects by specialized and independent investigation.

The graduate school, in this way, not only conserves the acquired results of American scholarship and preserves its traditions, but it pushes it continually forward into new and unoccupied territory and extends the boundaries of knowledge. We are not to think, as has already been pointed out, of the graduate schools of the American university as institutions devoted to research alone. They are teaching schools in which are taught the processes of original investigation; but the highest aim of teaching and its ultimate end is the inculcation of a love of research—of exploration into the unknown country beyond the boundaries of charted knowledge, with the desire of adding something, at least, to its known extent.

The function of the graduate school, furthermore, throughout the university is to enliven the spirit of instruction, to keep it fresh and growing, and to prevent the inroads of the moth and rust that are bound, if let alone, to affect the treasures of learning as well as the more material treasures of earth. An always besetting menace to the teacher who continuously teaches a single subject along circumscribed lines is to dig himself down, by constant repetition, into the sandy soil of his subject, until he finds himself ultimately in a sunken road along which he comfortably proceeds, but in which he persists to the end of his journey. The effect of the graduate school is inevitably to prevent the wearing of ruts in the scholarship of the teacher and to keep him consciously out on the broad highway where it is at any time not only possible but necessary for him to become actively cognizant of what is going on about him. And if the spirit of instruction in this manner is enlivened to the instructor, so is it in even increased measure enlivened to the student, who is quick to appreciate and to respond to it when it has in it, as it should have, the elements of freshness and of progress. Classroom instruction that is cut and dried is never long misinterpreted by the student, who quickly appraises it and is very apt to undervalue even its real worth. The graduate school, by its close intercalation with the instruction immediately below it, is preeminently this enlivening force to bring the student, through the instructor, into a living contact with progressive learning—with new facts to illustrate old principles and with new principles to illuminate the older facts of knowledge, and to encourage and to promote in teacher and taught an open and an eager mind which is not only to the present advantage of those immediately concerned, but to the permanent advantage, in the end, to all scholarship.

The graduate school, still further, is a vivifying force, not alone to the university of which it is a part, but also to the whole system of education upon which it is based. The betterment of the content of formal education and the consequent betterment in educational method to produce it inevitably proceeds, and always has proceeded, from the top downward. The graduate school, in this way, to meet its requirements for entrance upon its work, calls for a better preparation in the college; the college, to fulfill these demands for better conditions of instruction in the secondary school; and the secondary school, in its turn, for better results in primary education. The primary school, so far as I am aware, has never asked of the secondary school that it should increase its requirements, and the college, I am certain, has never been requested by the secondary school to make increased demands of entering students. Still further, the college has never requested the graduate school to increase its requirements for matriculation; and perhaps the most widespread general movement in American education at the present time is the endeavor of the minor colleges of the country to conform themselves to the accepted standard of what a college should be in fact to be properly called a college in name. It has been largely the service of the graduate school that it has brought up the standard of the smaller college in continually increasing instances to respond to its demands of proficiency

and to bring about a common recognition throughout the country of the proper educational conditions required in the scheme of education.

The old order has changed in the higher education in the United States within the last decade to an extraordinary degree, and it is to the graduate school that much of this change is due. The great development of graduate instruction has carried inevitably with it a closer scrutiny of actual conditions at hand in the whole field of education, and more than any other influence whatever it has worked to bring about the beginnings, at least, of a well-adjusted system of education. We can not yet boast of perfect conditions of educational organization in the United States, nor doubtless ever can, but the graduate school, in the exercise of its particular function of a guardianship based upon the rational insistence of a fundamental scholarship for entrance upon its work, holds the key of the problem largely in its hands.

The graduate school, in the exercise of its particular function in American education, looks both downward and upward. Its province is to fix and maintain a reasonable standard of requirement in the stages of education below it, on the one hand, and to extend the opportunities of scholarly acquirement on the other. For what American education is in its scope and in the efficiency of its accomplishment depends largely upon the attitude of the graduate school, and what American scholarship shall be will be almost wholly of its making.

The CHAIRMAN. The object of the papers in this section to-day is to set forth for the benefit of our guests from Central and South America two of the peculiar institutions of the educational systems of the United States—the graduate school and the independent college. They distinguish American education from the French, German, and English in certain ways as clearly as they mark it out from the education of other countries. The second paper on this subject of the graduate school will be given by Dr. Albion W. Small, dean of the Graduate School of Arts and Literature, in the University of Chicago.

Mr. SMALL. If I could have had the ordering of a scenario for the setting of my part of the program I could not have imagined anything better than this survey by Dr. Carpenter. I have simply assumed, as he did, that it was our duty in this program not to debate anything that is problematical with us, but to make a frank statement of certain of the things which are commonplace, that is, in such a way that our friends of other Americas might see just what we are doing to-day, and if possible something of how far we are succeeding in doing it.

If I might have the ear of our friends in other countries when they are looking over these printed reports I should say it is unnecessary for them to go beyond Dr. Carpenter's paper in finding out the facts and the spirit of our graduate-school ideals. He has said everything that I am to say. I am simply putting (without any understanding beforehand) an emphasis on certain things that may have been somewhat differently emphasized in Dr. Carpenter's paper; but it seems to me that we might say to our friends in other American countries that this coincidence of expression in these two papers is an index of the fact that our graduate-school ideals in this country are not fictitious, but are ideals which are represented by institutions on the Atlantic coast and on the Pacific coast and in the region intermediate.

THE PURPOSE OF THE GRADUATE SCHOOL.

By ALBION W. SMALL,

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It is not easy to discuss the subject of this paper without leading up to it through one's whole philosophy of education. Yet scarcely two persons agree precisely about a philosophy of education through its whole range, from nursery to second childhood. In view of this fact, the impulse to construct a theoretical pedestal for the graduate school must be repressed, and the prescribed topic must be treated with a mere hint of an introduction.

There are university men who maintain that everything which is done in the graduate school should be done in an elementary way in the kindergarten, and that there should be a steady development of these things until the process culminates in the work of fully equipped doctors of philosophy. Others insist with equal force that there should be two or three or perhaps more successive types of educational training, one ending and another beginning at designated junction points, the latest transfer station being at the line of promotion from the college to the graduate school. Whether these ideals are really as different as the statement of them sounds, or whether they merely amount to different ways of accentuating identical ideas, I will not presume to decide. For the present purpose a decision is not needed. At all events, a graduate school must maintain a program which, in degree if not in kind, differs radically from the routine of the college. If an institution styled a graduate school does not do this, it is at best an arrested development, and at worst a pretense and an imposture.

In order to avoid the necessity of argument about the earlier educational grades, I express no supposition then about the nature of their functions. Whatever their division of labor, the elementary duty of the graduate school is to stimulate intellectual skepticism. If authority has had sway up to the threshold of the graduate school, it must at that point abdicate in favor of liberty. There is no valid reason for the existence of a graduate school, and it can not exist in reality, unless its breath of life is the assumption that traditional knowledge is merely partial and provisional. The title graduate school is a misnomer unless it corresponds with the guiding idea that the things we seem to know are merely adumbrations of things some time to be more fully known. The graduate school finds its task in the foremost constructive work of human intelligence. This work does not consist in perpetuating records of previous intellectual accomplishments, but in continuing the process of enlarging the dimensions and enriching the contents of human knowledge.

I will merely allude in passing to the level above that of the graduate school. It is occupied by the type of organization to which by common consent we may apply the name institute. The broad general distinction between the institute and the graduate school is that the former is supposed to be devoted to research alone, while the latter is devoted first to training for research, and second to research itself. The institute may thus be termed a supergraduate school. If the line of division were sharply drawn, the institute would have no place for apprentices in the methods of research, but only for recognized journeymen and master workmen. The graduate school is supposed to be a point of contact between some master workmen in research, some journeymen, and a relatively large number of apprentices. The American theory is that, as a general rule, the research will be more fruitful when conducted by men who are investigators, and at the same time teachers of the processes of investigation, than by men who investigate without teaching. Whether this is true or not, it is obvious that the apprentice in research will make more progress in his methods if he is guided by an experienced investigator than if he is thrown entirely upon his own devices. Thus, whether or not the graduate school secures the maximum research results of which its

staff is capable, it at least propagates the species investigator, and insures more effective research in the successive generations than would be probable if no training schools for investigators existed.

Returning, then, to the primary task of the graduate school—namely, the stimulation of the critical spirit—it is assumed that before admission to the graduate school the student has acquired such knowledge of certain conventionally prescribed portions of the tradition of his society that he is entitled to rank with the class which in that society is called educated. In the United States of America this class is approximately distinguished by possession of the bachelor's degree, or by the reputation of having intellectual attainments not inferior to those supposed to be attested by that degree. Thus the graduate student is supposed to be prepared for relatively mature intellectual pursuits. He is credited with being capable not merely of learning how to rethink other people's thoughts, but also of acquiring ability to stand in judgment upon the validity and the sufficiency of all previous intellectual achievements in some chosen field. He is supposed to be ready for training as an explorer and surveyor beyond the frontiers of traditional knowledge. If these suppositions prove to be in any degree premature, the graduate school must begin by supplying deficiencies left over from previous training.

I am obliged to confess that, so far as I am able to ascertain the facts in American graduate schools, they do not very perfectly conform to the standard thus indicated. It is impossible to present precise statistical statements on this point. I content myself, therefore, with the cautious assertions: First, that the quality of students in the same graduate school may vary considerably from year to year, and from department to department in the same year; second, that it would probably be the exception and not the rule, if the first year students in a selected department in any American graduate school could, as a body, be successfully treated as ready to strike into the problem aspects of their chosen subjects. As a general rule, and in most departments, if my suspicion is correct, a large part of the first year in graduate residence has to be devoted to strengthening intellectual foundations, and to acquisition of relatively rudimentary ideas and processes. Indeed, I fancy it is not far from the truth to say that the first graduate year accomplishes most in the way of selecting the few who give promise of developing into the investigating type, and in convincing the many that their vocation is not research. At the end of one graduate year the students that remain are fairly ready to go with their instructors upon easy searches, and occasionally one will have developed initiative enough to map out problems of his own, and to plan methods of solving them.

In the course of this first year in the graduate school, the bulk of the instruction will probably have been exhausted in certain general orientations. That is, the student must be led to make a somewhat more detailed survey than he has made before of his prospective field of investigation. He must be made aware first of all that the things to be known in this field are not all discovered and recorded in print. He must be made familiar with the main lines of connection or separation between his chosen field of knowledge and other more or less remote areas. His eyes must be opened to ways in which his field requires more intensive cultivation.

One of the elementary requirements of the graduate school is that candidates for the doctor's degree shall early acquire a reading knowledge of those modern languages beside their own in which there is the most effective critical work in their subject. The thought behind this requirement is that scholarship can be only in a restricted sense critical if it is provincial. The scholarship of any country needs to be cross-fertilized by the scholarship of other countries. Ideally the specialist of each nation should be able to read the technical journals on his subject published by every other nation. Between use of one's own language only, and acquaintance with every language which is the medium of critical investigation, two languages beside the mother

tongue are supposed in the United States to represent a reasonable compromise. For English-speaking students it has been rather generally assumed that these languages should be German and French. It is evident, however, that rules prescribing these languages must be elastic enough to permit frequent exceptions. Another modern language will often open up more critical work in a given subject than one or other of these. Indeed there is a certain subdivision of botany in which by international agreement the means of communication is Latin. Accordingly for workers in this field Latin has become a modern language, and must be treated as such in administering the language requirement. If, then, students do not enter the graduate school with the necessary language equipment, it is always a question how much of the time, especially of their first year, must be consumed in removing this deficiency.

There is, therefore, as a matter of fact, no invariable date in his graduate school career at which the student may profitably be introduced to the problem aspects of his subject. Professedly the process begins at once. In practice very much work must be done with a great many students by way of laying the foundations necessary in conventional knowledge both within and surrounding the field which they propose to enter.

Illustrations may serve better than general statements to indicate what is meant by the problem phase of knowledge and by the critical attitude. In the first quarter of the nineteenth century students entered the universities with minds undisturbed by doubts about the authenticity of the stories which they had read in their Livy. These narratives were accepted childishly, as containing the truth and nothing but the truth about the early history of Rome. It occurred to Niebuhr that the stories of ancient Rome were a mass of undifferentiated fact and fancy, of fragmentary truth idealized into mythical and fabulous unreality. Niebuhr is credited with having taught European scholars that this mass of Roman tradition must be sifted, and that so much of Roman experience as can now be recovered must be restored through processes which must be relentlessly incredulous toward the conventional versions. This was a first rate opening for what we now call graduate instruction. Its first lesson was incredulity about tradition unless it is supported by indubitable evidence. Henceforth separation of the literal from the mythical became the fundamental exercise of historical apprentices. At the same time the labyrinth of intertangled laws handed down from ancient times was regarded by the legal profession in the German States as somehow without exception authoritative, although it was beyond the power of the legists to reduce it to consistency. Thereupon Savigny and Eichhorn began the work, the former for Roman, the latter for Germanic law, of blazing out the course of events by which ancient authority had held over to modern conditions, and of separating those parts of the process which represented forcible subjugation from those that expressed the developing habits and customs of virile nationalities. Here again was a type of incredulity and of problem which has continued until the present to provoke research. Almost simultaneously the unsatisfactory condition of historical evidence began to appear from another angle.

Ranke became the stimulator of research problems by following out his youthful ambition to separate the chaff from the wheat in historical sources. In his monograph, *Zur Kritik neuerer Geschichtschreiber* (1824), Ranke says: "The present work has three purposes—first, to justify the method in which I have used the sources in my attempt at a history of the Romanic and Germanic peoples; second, to give to those who want to inform themselves thoroughly about the beginnings of modern history instruction with reference to the books which they may and may not use for this purpose; third, to contribute, so far as I am able, references to the chief and strictly scientific writings in the nature of authorities which may serve toward collecting an uncorrupted mass of material for modern history for a fundamental judgment about the nature and value of the works extant with reference to these sources." It turned out that Ranke opened up vistas of problems for the past century all starting with the problems of evaluating historical documents.

During the same period academic men of another type all over Europe were delving into the whole exhaustless complex of problems suggested by Adam Smith's shifting of attention in the *Wealth of Nations*, from the immemorial fiscal question, How may princes supply their treasuries? to the absorbing question of the democratic era, How may nations get rich? A little later the political philosophers of Europe began to face the portentous problem, Is there such a thing as society, which is destined in any way to modify the prestige of the State? From this beginning there has been an obscure but irresistible movement of thought till present psychological and sociological analyses of group phenomena have brought the whole of human experience into new focus, and have created a demand for thorough reinvestigation of social cause and effect.

Each of these instances might serve as a sample of the problem situation, and the intelligent attitude in view of such a problem situation has come to be known as the critical spirit. So far as the social sciences are concerned, there has never been a time when so many and so complex problems of knowledge were challenging investigation as at the present moment, and it is obvious that the need of trained investigators grows with the difficulty of the problems.

The illustrations thus far have been drawn from those departments of knowledge with which my own studies have been occupied. Of course the same thing in principle is to be said in terms of other divisions of knowledge. The essential spirit of the graduate school has seldom been more vividly expressed than by my colleague, Prof. John M. Coulter, head of the department of botany in the University of Chicago, on the occasion of an assemblage in memory of Prof. John U. Nef, late head of the department of chemistry in the same university. I am permitted to develop the present subject by quoting at length from Prof. Coulter. In doing so I am illustrating the further fact that no difference in essential conception separates the physical and the social sciences. Prof. Coulter says:

The research function of a university is its greatest function. In biological terminology it may be said to represent the central nervous system of the university organism. It stimulates and dominates every other function. It makes the atmosphere of a university, even in its undergraduate division, differ from that of a college. It affects the whole attitude toward subjects and toward life. It has been described as the "delirious yet divine desire to know." This devotion, not merely to the acquisition of knowledge, but chiefly to the advancement of knowledge for its own sake, is the peculiar possession of universities.

This does not mean that teaching is not also an important university function; but it means rather that teaching is to be made most effective in an atmosphere of research. The university investigator not only lives on what may be called the "firing line" of his subject, but he is training group after group of recruits to continue the conquest of the unknown. To extend the boundaries of human knowledge, and to multiply oneself in generations of students is the high privilege of the university investigator.

It is a point of view that seems to separate him from the ordinary interests of men, but to separate oneself from the vast majority of one's fellows in denying the ordinary ambition for place or for wealth, to devote oneself to the research for truth, with no expectation of recognition, except from a select coterie of colleagues, to spend one's energy upon investigations that will neither interest nor benefit mankind, except as they gradually enlarge the boundaries of knowledge, is a spirit distinctly fostered by the university.

In these days the demand that investigators shall be of practical service is swelling into a universal chorus. This demand fails to recognize the fact that to meet immediate need is relatively a superficial problem; and that the more fundamental the problem, the wider are its possible applications. For thousands of years the superficial problems of plant breeding were attacked, and agriculture became a reasonably successful practice; but when such fundamental problems as evolution and heredity came to be attacked, an incidental result was a revolution of practical plant breeding.

The study of anything that holds no relation to the needs or convenience of mankind is peculiarly difficult of comprehension by the American public, and the general sentiment is either opposed or at most indifferent to it. This feeling is emphasized by the development and rapid growth of technological schools, in connection with

which there has developed one of our most serious problems. It can hardly be denied that the rigidity of the old American college in denying this form of special training its proper place, and thus controlling its prerequisites, forced the establishment of schools of applied science with no educational basis. And now the universities are confronted with the problem of incorporating this form of training into their organization without weakening it.

There must be the pursuit of science for its own sake, for it is the life blood of a university; and there must be the application of science, for this is the genius of the age. Can these two exist together in the same university organization, and with mutual profit? The grave danger is that the essential function of a university may be given less opportunity to develop than certain subsidiary functions. The time has come, however, and our colleague's subject illustrates it, when the barrier between pure and applied science is more artificial than real, when each is essential to the best development of the other. Applied science is becoming so grounded in pure science that the former is only one of the natural expressions of the latter; and applied science has passed through its empirical stage and can advance now only as it cultivates pure science. The problem, therefore, is not so much one of grafting, as of cross-fertilization, that the strength of both may be combined in a single organization.

Perhaps it is fitting when we are considering the work of a great investigator to sound a note of warning. In these days of efficiency, when university faculties are being checked up on the basis of the number of students and the number of hours spent with them, there is grave danger that efficiency of this type may be secured at the expense of investigation; in other words, that the teaching function of the university may be exalted above its research function. This would be disastrous, but it is certainly true that the atmosphere of business efficiency is not the atmosphere in which investigation can flourish, for research knows no limits of time and strength and numbers of students.

The normal atmosphere of a university is investigation; and the method of instruction is through companionship in investigation. The appropriation of previous knowledge is no longer the chief purpose, but is entirely subsidiary to the discovery of additions to knowledge; and the ability to stimulate students to investigate becomes the chief problem of teaching. This truth is so fundamental that without it there can be no universities distinct from colleges, no matter how prolonged the instruction might be. The distinction is one of controlling purpose; in the one case it is chiefly acquisition; in the other case it is chiefly the development of initiative. In other words, we are equipped to teach through investigation, at least in an atmosphere of investigation, and anything that vitiates this atmosphere impairs our teaching function as well.

The loss of our colleague is irreparable in the sense that men of his research spirit and power are very rare. Furthermore, it is a loss in connection with our chief function, so that it affects us in a vital part. The great lesson of this loss should be a renewed appreciation of the place of research in the university, and a renewed determination to permit no other function to diminish its opportunity, and to allow no method of administration to depress its spirit.

Since the foundation of Johns Hopkins University in 1876 the ideal of the graduate school in the United States has been secure. The realization of this ideal still leaves much to be desired-

Adjournment.

SESSION OF SUBSECTION 9 OF SECTION IV.

GEORGE WASHINGTON UNIVERSITY,
Wednesday afternoon, December 29, 1915.

Chairman, W. T. BAWDEN.

The session was called to order at 2.30 o'clock by the chairman.

The CHAIRMAN. The first paper is on "Cooperation between public schools and organizations of employers and employees in making and executing plans for industrial education," and was prepared by Mr. Arthur Williams, of the New York Edison Co. Mr. Williams is not here and Mr. F. C. Henderschott, executive secretary, National Association of Corporation Schools, of New York City, will read Mr. Williams' paper. Mr. Henderschott has also prepared a paper on "Corporation schools." We might have his paper read immediately afterwards, and then have discussion on the two papers.

COOPERATION BETWEEN PUBLIC SCHOOLS AND ORGANIZATIONS OF EMPLOYERS AND EMPLOYEES IN MAKING AND EXECUTING PLANS FOR INDUSTRIAL EDUCATION.

By ARTHUR WILLIAMS,
Of the New York Edison Co.

During one of his eloquent and forceful addresses, President Hadley, of Yale, made a statement to the effect that the trained mind can not with safety be eliminated from our industrial life. Yet this we have been doing—we have been eliminating the trained mind from the industrial life of the country. The industrial progress of the past decade, in addition to an extreme degree of organization and specialization, has included the invention and use of machines which substitute former industrial training under the apprenticeship system, and practically do the thinking of the worker. Thus, step by step, the machine as the complete process, or as a part of the process, has been substituted for the trained hand and the skilled mind, and human values have been increasingly measured not by mental weight but by muscle and endurance or a mere attendance upon the machine.

AN UNDESIRABLE CHANGE.

With decreasing need for special skill or training has likewise decreased the need of any particular human being. In the judgment of those conducting many of our industries, one worker has seemed the equal of another, and the process of replacement has oftentimes appeared to be the path of least resistance. Thus, men and women, in the individual sense, have become less personally identified with and important to their particular work. It has been perhaps more convenient to know them by numbers than by names. This is a change which, even were it desirable for the employer, would not be so for the community and least of all for the individual.

A GOOD SCHOOL.

The old apprenticeship system, following perhaps an elementary acquaintance with reading, spelling, and arithmetic, produced an extraordinarily capable and gratifying type of manhood. It was the best kind of a school to prepare for the work and the problems of life. The young man entering upon his career was brought in contact with those who had, step by step, accomplished something in their world, and in addition to the example of bright-minded, well-developed men around him he possessed every chance of ultimately following in their footsteps and succeeding to their positions, industrially and socially, in the church and the community, and generally among their fellows.

Our modern industrial methods have eliminated the necessity for this secondary training. They have taken away the need for special human skill and almost every human attribute, except muscle and endurance. These methods have substituted a lack of personal identity with one's work and monotonous routine. They leave a full brained man with no brain work, a man ambitious for himself and for those dependent upon him with no outlook through which his ambitions might be gratified. Could dissatisfaction and unrest be other than expected as a result?

AVERAGE EARNING POWERS.

Take in groups what the absence of secondary education means in another sense. I refer to the average earning power of our workers, each possessed with different degrees of educational opportunity in their earlier lives. The first group is composed of those who go into business without other education than that of the elementary school. Their average earning capacity is about \$10 weekly, and they reach the maximum wage soon after passing their majority. The next group is composed of the apprenticeship class, where it is found that their average earning capacity is about \$15 weekly, or 50 per cent more, and their maximum earning point is reached some two or three years later in life. The third group is of graduates of the upper schools, who are capable of earning an average of about \$20 weekly, with their maximum again deferred two or three years. The fourth and most favorable group is composed of the graduates of our technical schools and colleges, where the earning capacity approximates \$40 weekly. The maximum is deferred until 30 years of age, and even some years later their earning curve is still rising.

Consider the effect upon the worker, who finds that his opportunities and the results of his efforts reach their maximum shortly after he has come of age, and with earnings hardly beyond the point of mere existence. Compare this group with any of the others, but particularly with that composed of those who have had the advantage of a broad education, who find themselves with an income which permits the enjoyment of all the necessities and many of the luxuries of life, and their hope of new accomplishments and further advancements still strong well on into the later years of their lives. Can there be any doubt as to which of these groups is the most desirable both to those to whom they render service or the community at large? Can there be any question in the mind of anyone that education gives men not only higher industrial values through which they serve themselves and their fellows but through which they become saner in their conclusions and better members of our citizenship?

WAGES ALONE NOT SUFFICIENT.

Many believe that mere wages, however high, will not bring industrial contentment or lead to the highest type of human development. There must be something more, and the feeling is that a part of this something must be a higher type of individual, and therefore a higher degree of average education. This is not in the sense of a philanthropic or charitable contribution to the recipients, but rather in the belief that the benefits are at least threefold—to the employer, to the community, and to the individual.

PUBLIC UTILITIES MODERN NECESSITIES.

To an increasing extent our public-service corporations are supplying absolute needs in our everyday life. Life to-day would be intolerable, if not impossible, without the steam and electric railroads, without the telephone and the telegraph, without gas and electric light. Take, as one illustration, the effect of an interruption in our means of transportation, where it will be remembered that following the strike of two or three years ago on the English railroads the death rate of London, principally the children's death rate, was enormously increased with the stoppage of the milk supply. Consider the business as well as the social disruption that would follow the breaking of the telephone service; a comparatively short breakdown on the subway indicates the degree to which we are dependent upon convenient means of travel between different parts of the municipality; or consider what would happen should a serious break occur in the electric service of the city, where the illumination of the highways affords protection to property and personal safety, where the illuminations of the theaters and public buildings are so necessary, and where large buildings depend upon the street service for light, power, and elevators. To-day all these things are to be numbered among our necessities. They are increasingly entering into our daily lives and their proper conduct calls for a specialized education of the highest degree.

CORPORATION SCHOOLS.

In recognition of the rightness of these views many of our corporations are providing educational opportunities. Some of these opportunities are technical and highly specialized and are confined to the comparative few; others are general, and if followed through they will eventually leave the student in no way handicapped in his life work in comparison with such opportunities as he could enjoy were he a graduate of a technical school or college. Perhaps in some instances the employer's school is more advantageous and results in stronger and better developed character, for here the lesson of the day is more quickly applied and its value, therefore, more quickly and fully appreciated.

As indicated, the advantages of these educational methods are manifold. That is to say, it is not wholly to the employee, not wholly to the employer, and not wholly to the community. Rather it is enjoyed by all, though perhaps the most immediate and direct benefit is to the employer, and therefore the cost is justified as an element of production expense.

Between these schools and our educational authorities, particularly those of the higher grades, there should be the closest cooperation. Of approximately 300,000 commercial and industrial undertakings in the country, about 600 only appear to have the financial resources necessary to provide even elementary educational facilities to their employees. Yet to an almost equal degree all require skilled and trained workers, and from the standpoint of the workers themselves and the community at large all workers should be trained and skilled.

EDUCATION PRIMARILY A PUBLIC FUNCTION.

Education is primarily a public function, and therefore industrial enterprises organized for profit are justified in providing educational opportunities for their employees only in so far as may be required to insure the conduct of their business at high standards of efficiency. It would seem that the acceptance of this principle leads readily to a combination of effort through which the demands of industry, on the one hand, and of the public, on the other, can be satisfactorily met. The methods to be followed can be those of the employer and the community in common, with probably the exercise of that degree of public control which may be deemed necessary or desirable in a question so important as this and which in the last analysis bears so directly upon matters of public welfare. It would seem that best results can be secured, first, by recognizing the unity of purpose, and, secondly, by making our efforts for higher standards of education in our industries a part of our municipal, State, and national educational movement.

AN EXCEEDINGLY SMALL PERCENTAGE OF OUR POPULATION RECEIVING SECONDARY EDUCATION.

From the extent to which the public schools of the country are being utilized by our boys and girls may be determined the extent to which our American people are going into their life work with no education other than that of the elementary schools—and this at only the average graduating age—and the education, more or less accidental, of their home life and the environment which surrounds their occupation. According to the best information available there are approximately 6,000,000 boys and girls between 18 and 24 years of age of whom only 200,000 or 3½ per cent are in the colleges. The mortality of education in this country is appalling. It is lamentable that still many children never go to school, and it has been estimated that not more than 60 per cent of the children attending school continue beyond the sixth grade. It is said that of 1,000 originally entering the elementary schools only 213 pass through the eighth or final grade. Of this number 109 enter high schools and 34 are graduated; of the 34 who are graduated from the high schools 17 enter the colleges and from these only 7 are graduated.

Thus it would appear that of each 1,000 children entering the elementary schools only seven, or less than 1 per cent, pass through the colleges and are graduated. Something must be done to remedy these conditions, for who can view with other than alarm a population such as ours in which so vast a proportion enter upon and continue through their life work with no education other than of a most accidental nature and represented by something within the limits of the sixth grade of our elementary schools. A different view would undoubtedly be acceptable if the old apprenticeship schools were still between the boy—and now the girl as well—and his final life work; but modern industry has to a large extent taken these opportunities away and as yet little has been substituted.

STATE LAWS ON INDUSTRIAL TRAINING.

Massachusetts, New York, Pennsylvania, New Jersey, Wisconsin, Indiana, and Connecticut have laws providing for the creation and conduct of vocational schools. There is a second group of seven States in which aid is given to the municipal schools of a like nature, but States like Ohio and Illinois do not appear in even the latter list.

VOCATIONAL GUIDANCE.

It is not to be inferred that any system of vocational training is recommended. That is to say, in the judgment of the writer, it would not be a wise plan to attempt to train a boy or girl attending our elementary schools, say, for salesmanship, dress-making, millinery, carpentry, plumbing, bricklaying, or any of the kindred trades. In the first place, it would not seem fair to place a handicap upon a boy or girl of this age and attempt to select the occupation which would probably be the occupation of his or her entire life, nor would it seem that our commercial or industrial efficiencies would be conserved, for the proper selection at this age of the individual for a given kind of work would be the result of merest chance. Manual training, which leads to vocational selection, does not fall within the scope of this suggestion and would seem very desirable, partly in that it develops the practical side and partly in that it gives the student a chance to escape from an exceedingly narrow and specialized environment into one of greater breadth and opportunity.

It might be pointed out that the apprenticeship system of old, the corporation school of the present day, and many of the highly acceptable educational methods of Europe do call for a certain degree of selection. This is true; but the selection is exercised usually after the student's mind has developed to a point where some degree of selection may be fairly made, or it is made under conditions which to a certain

extent insure success, or within a field of effort in which there is a range of movement, so that while the selection may be confined to a profession or an industry, yet within the limits of either there are possibilities of change which will allow for varying degrees of ability or adaptability or of temperament or mental or physical aptitude. Perhaps in efficiency of teaching the corporation school stands highest. The lessons given within the environment of the day may be quickly applied, and if learned they make a deeper impression upon the mind of the student and encourage additional effort in the same direction. Probably a combination of public and corporate education of this character would be even better—the former to give to the student knowledge of a general nature, and the latter that type of specialized training which will make him a better and more efficient employee.

IN CONCLUSION.

The National Association of Corporation Schools represents a group of about 100 industrial schools which have joined together for the purpose of bettering their methods and endeavoring to accomplish within their teaching staffs that which these staffs in turn are endeavoring to accomplish amongst students—higher degrees of efficiency and usefulness. The members of the association have in excess of 1,000,000 employees, which will give an idea of the extent to which the thought of industrial education is now spreading over the life of the country. This by no means indicates the limits of the movement, for there is hardly a civic center of the country in which the question of vocational or manual training in one form or another is not receiving serious thought. So necessary does it seem to insure the permanency of our institutions that the major percentage of our population shall receive an education, to a certain extent specialized and to a certain extent cultural, that we may well take into consideration some method by which every boy and girl shall pass into his or her life work, not as now from an average of the sixth grade of the elementary schools, but with a definite degree of secondary education, which, in addition to making for a better industrial and commercial efficiency, will produce a higher standard of personal attainment and of citizenship.

If the young men of Europe can be taken from industrial activities and returned after a period of from two to three years of military training, and this without serious economic loss, it would seem that some like rule could be adopted here where the end in view would not be a highly specialized militarism, but rather a broadened and specific individual or personal cultural, as well as commercial, education.

THE CORPORATION SCHOOL.

By F. C. HENDERSCHOTT,

Founder and Executive Secretary of the National Association of Corporation Schools and Manager of the Bureau of Education of the New York Edison Company.

The corporation school is an American institution. Authorities differ as to what constitutes a corporation school, and therefore there exists a difference of opinion as to when and where the first school was held. It is known, however, that this institution is at least 20 years old, and that it had its origin in the United States.

Public primary and secondary schools and other secondary institutions for education in Germany have enlarged their functions to include industrial training, but a similar movement has made much headway in this country. There is, however, almost universal misunderstanding of the educational situation in Germany as it relates to industrial training. It was on January 12, 1903, that Dr. George Kerschensteiner gave his address in St. Peter's Church in Zurich, the title of his address on that

occasion being "The school of the future in the spirit of Pestalozzi," and, as related in the preface of his book on "The Idea of the Industrial School," he says: "I called this school an industrial school."

The movement for broader industrial education, however, spread more rapidly in Germany than in this country, but the movement in Germany was kept under the control and development of the primary and secondary schools and universities. It was not until some five years ago that the corporation school idea began to develop on a broad scale in the United States.

On January 24, 1913, an organizing convention was held at New York University, in New York City, at which time the National Association of Corporation Schools came into existence. About 31 industrial corporations sent delegates to that meeting, but it was not until the 4th of the following April that the charter membership was closed with 18 industrial institutions and active work was commenced.

Just what a corporation school is has not been defined or accepted. The National Association of Corporation Schools has a membership at the time this article is written of 91 industrial institutions known as Class A. There are two other classes of membership known as Class B, or employees of Class A members and Class C or associate membership. The latter two classes are incidental to the movement and not at all vital to its success. The Class A membership is composed of industrial institutions representing over 60 different branches of industry, located in 17 of the different States. The movement was started and developed most rapidly in the eastern section of the country, although at the present time Georgia, Colorado, Utah, and California are among the States from which Class A memberships have been secured.

The National Association of Corporation Schools gives as its functions:

1. To develop the efficiency of the individual employee.
2. To increase efficiency in industry.
3. To influence courses of established educational institutions more favorable toward industry.

Each member conducts its own educational activities in accordance with its own ideas and plans. The national association exercises no authority, but acts as a clearing house by providing a forum for the interchange of ideas and by collecting and making available data as to successful and unsuccessful plans of developing the efficiency of the individual employee.

Voting power is vested entirely in the Class A membership. Activities of the national organization are carried on through an executive committee, which has complete and supreme authority, but is advised, as occasion may require, by a policy and finance committee made up of presidents and other executives of the Class A member companies, which committee, however, has no authority other than to suggest and recommend.

Under the jurisdiction of the executive committee there are subcommittees, each of which is assigned a special problem, as, for example, "Trade apprenticeship schools," "Special training schools," "Retail salesmanship," "Advertising, selling, and distribution schools," and "Office work schools." There are also subcommittees on "employment plans," on "public education," on "safety and health," and on "vocational guidance." It will be appreciated that these are subjects so closely related to training that they must be given consideration in order that the training courses be effective. If employment is carried on effectively, training is already half done.

Safety and health are equally important, and placing the employee in the work which he likes to do and for which he is temperamentally fitted is a problem that can not be entirely ignored. Embracing such a variety of the branches of industry and covering so many divisions it is evident that there could not be a classification or standardization of educational courses. For example, one of the railroad systems, embraced in the membership of the national association, conducts 38 schools all of

which, however, are for apprentices in its mechanical divisions. As yet this corporation has not developed training for the other classifications of its employees. As against this condition one of the public utility operating companies has but three schools, but the three cover every classification of employees in its service.

No attempt at standardizing has been made, but the various courses conducted by the member companies are being codified and a report of this committee will be made at the next annual convention to convene in Pittsburgh the latter part of next May.

There are other industrial institutions known to have instituted educational courses on behalf of their employees, but which are not members in the National Association of Corporation Schools. The number of such industrial institutions is not known, but probably will not exceed 20 or 30.

The movement has progressed sufficiently far, however, that it may be safely stated that there is general agreement as to what should be taught. The subjects may be broadly classified under three general subdivisions: First, health; second, vocational; third, knowledge—(a) General, (b) specific.

It has been demonstrated that there is nothing of so great importance in industry as health, and information upon which health may be secured and retained can be taught.

The second classification is more vague and therefore difficult to define. It not only embraces placing the employee in the division of labor for which he is best fitted temperamentally, but it also embraces his progress from that point, including promotion, discipline, and discharge, if necessary. Under this division must be classified the growing practice of compiling and maintaining personal records of each employee. Some industrial institutions insist upon physical examinations and other examinations, physical in nature, at definite periods, after entering upon employment.

The third subdivision embraces the general knowledge which the employee is supposed to get in the established institutions of education before entering industry. If the employee is a graduate of high school or some secondary institution of learning this problem is practically solved, but as only a small percentage of the adult male population of the United States has received any high-school education and a much smaller percentage any academic training, and as practically all of the male population enters industry in some form, the problem is an unsolved one, as well as one of first importance.

The corporation school is not called upon to entirely solve this problem. Industrial training is receiving greater consideration in not only the common and high schools but also in the continuation schools, the part-time schools, and night schools. Other experiments are being tried which will undoubtedly have an increasing beneficial effect as the movements gain momentum.

The subject of industrial education has been taken up by the lawmakers of several of the States, although at the present time only Massachusetts, New York, Pennsylvania, New Jersey, Wisconsin, Indiana, and Connecticut have passed industrial education statutes. There is a secondary list of seven States in which State aid is given approved municipal systems. One reason why more legislation on this subject has not been enacted has been inability to decide just what laws would prove most beneficial. Wisconsin and Pennsylvania have led in the movement and several of the other States will undoubtedly pass laws on the subject during the present winter.

It is obvious that industrial institutions will do only so much educational work on behalf of their employees as will be necessary to gain and maintain high standards in production and marketing. It is not a function proper of an industrial institution to educate.

For the first time in the history of the civilized world there is now a realization that educational training must be broad enough and comprehensive enough to fit

every boy and girl for their life's work. The industrial corporation can not escape a share of this burden, but the industrial corporation does not approach the problem from any sense of philanthropy. It is an economic problem and is being so recognized.

There now are something over 100 industrial corporations (embracing in excess of 60 different branches of industry) experimenting, inaugurating, and maintaining educational courses on behalf of their employees. Their combined work covers broad subdivisions as previously given; banded together as a national association, maintaining headquarters where the results of each individual member's work is sent to be tested, discussed, and adopted or rejected as final judgment may determine, it is inevitable that within a relatively short period of time a comprehensive system of industrial training will result. Other things being equal, the trained mind always wins over the untrained mind. This being true, when the movement has sufficiently developed in the various subdivisions of industry, as a matter of self-preservation every business institution must train its employees or be outdistanced in the race for industrial supremacy.

Before training can be done effectively, however, it is necessary to know just what should be taught and how to teach it. The problem is not so difficult so far as it relates to apprentice schools or even office-work schools, but when applied to special training schools which differentiate from apprentice schools, in that a complete trade is not taught, the problem becomes more complex and it is even more difficult to define just what should constitute a course in salesmanship. Marketing is as old as civilization, but salesmanship is of such recent origin that the word is not found in the latest unabridged edition of Webster's Dictionary. Three of the four educational institutions, national in character, which teach the subject of salesmanship, through the correspondence method, do not even attempt to define what salesmanship is, and the other institution gives a fallacious definition. As the dictionary does not attempt to define the term there are many conceptions, none of which, however, seems to quite fit. The word which is most nearly comparable is workmanship, but workmanship involves a greater degree of physical effort than is required in salesmanship. In other words, salesmanship is the human qualities which enter into marketing. Here we find ourselves deep in the mire of psychology. However, the Carnegie Institute of Technology is to open a school where salesmanship will be defined and taught. There is a large appropriation available for this purpose, and in the course of a year or so it is quite probable that the corporation school will be able to proceed with a better understanding of its tasks.

Another problem of importance is to secure suitable instructors. Even though the corporation might have definite knowledge as to what are its educational requirements and be in possession of suitable curriculums for the courses which would best meet its needs, the problem of industrial training is still unsolved until proper instructors are in charge of the work.

It has been found to draft such instructors from the educational institutions is not altogether successful, as the instructor comes into industry with an entirely academic viewpoint. Acceptable instructors must possess both an academic and an industrial point of view. They must be able to harmonize the two. They must possess the faculty to inspire others. They must be endowed with unfailing patience.

The corporation school has come to stay. The foundation has been laid and the work of determining what shall be taught and how to teach it is well in hand. The movement has spread beyond the boundaries of our country and has gained a foothold in England, Germany, and Russia. The war has, of course, delayed its progress. Through a proper system of industrial training it is possible to increase the individual efficiency of the employee from 10 to 100 per cent. An average of 40 to 50 per cent is quite possible even in corporations where large numbers are employed. If the

individual efficiency of each working person in the United States was raised 10 per cent, the industries of this country would be the most efficiently conducted of any country in the world and the standard would be the highest ever known.

Mr. HENDERSCHOTT. The New York Edison Co. operates as an essential monopoly, although it is not, of course, a complete monopoly. There are many isolated plants in New York, but for all intents and purposes this company is a monopoly regulated by the State through the public service commission. Now a very high grade of service is expected and demanded, and it is impossible to give that grade of service without training our people, without training them even after the schools have trained them.

Mr. FISH. Isn't your work so specialized that you have no right to ask the public schools to train them?

Mr. HENDERSCHOTT. That is a big question. There we find ourselves between two fires. The charter under which our company operates, and it is typical of all companies that operate under franchise or eminent domain, says nothing about our doing any educational work. It is not a function proper of any industrial institution to do educational work. I think Dr. Snedden will agree with me on that.

Mr. SNEDDEN. What do you mean by such function?

Mr. HENDERSCHOTT. It is not the function of an industrial company.

Mr. FISH. A legal function, you mean?

Mr. HENDERSCHOTT. No, any function, ethical or legal, or any other function.

Mr. SNEDDEN. Suppose it proves to be an advantage?

Mr. HENDERSCHOTT. That is why we do it. It is not, however, a function under our charter.

Mr. FISH. You would not expect to see that written into your charter, would you?

Mr. HENDERSCHOTT. As a matter of fact, we used to have three general subdivisions of an industrial institution; that is, the production in the factory, the marketing, and the accounting and financing, and then we added transportation. We have four subdivisions of an industrial institution. I do not see that it makes any difference for the purpose of this institution whether it is operating under a franchise, or whether it is operating in any other way. And in fact it is the belief of the National Association of Corporation Schools that a fifth must be added, that of employees' relations. I do not like the word welfare, because welfare implies some philanthropy, and surely there is no philanthropy in industrial training.

Mr. BLEWETT. I view the question as a school man. I think we say, What is the function of the school? That depends upon the condition of society. We think we are doing some of the things that the manufacturers ought to do.

Mr. HENDERSCHOTT. Supposing, though, that you should say to the industrial institutions of a certain city, It is one of your functions (perhaps "function" is not the word), it is your duty, as one of the elements of this community, to do a certain amount of industrial training, or training of your employees, that they may realize a larger measure of this life.

Mr. BLEWETT. I am saying it to them all the time as strong as I can.

Mr. HENDERSCHOTT. Then you combat the very argument that we have been discussing—the argument of the large industrial interests that are attempting now to assume some of the educational functions which a large number of people claim should be entirely public in character.

Mr. BLEWETT. I think the school can do some of the things. I think that after all the real situation is this, that we are all educators and we have got to realize that part of the work may be vested in the industries and part of it vested in the school, and that cooperative work is going to get the best results.

Mr. HENDERSCHOTT. I agree with you absolutely. We were attempting to incorporate under the laws of the State of New York, and we found that we could not do it without the State of New York assuming the control of our schools; and the State of New York did not desire to assume that control. They would not know what to do with them after they got them, and they felt that whatever educational work they should do should be done through their regular organized systems. They were not willing to take the position that we should not go on and do a lot of educational work entirely as our own requirements seem to make it necessary. Now, as a matter of fact, our association has accomplished relatively small constructive results. We are only a little over 2 years old since we actually began business. We have, however, I think, clearly defined one thing, and I think it was expected. When we first started, for instance, a railroad would say, Now you are all right for the manufacturer, but you don't fit our needs and our purposes. Our problem is different; ours is transportation. So we set about to determine just how much there was in that, and we found that there was very little in it. For example, we found that the very first thing important to the industrial institution was health. That may be somewhat surprising, but that is the largest of our problems, the question of health. And we found that the elements of health—that is, the knowledge upon which health rests—to a certain degree, at least, can be taught; and it does not matter, of course, what particular line of business you are in; for it is just as important to one as to another.

The second big problem of that classification we will call, for want of a better name, "vocation." Perhaps we will get a better name, but at the present time we have not any.

You might say vocational guidance, although in my judgment very little is yet known by vocational guidance or vocational placement. Everybody seems to have a different meaning of what we are all trying to get some information on. That is as far as I am able to determine the vocation side of it. Under that would come placing the person in the particular work that he or she likes to do and at which he or she would be most successful. What would be a system that would do that? Now, in our company, we can do it fairly well, but only through experience; that is, we can not predetermine in any sense what a person is best qualified to do, unless you may perhaps get an idea from his temperament, whether it is methodical or something of that kind.

Mr. BLEWETT. Those things, I would say, were the proper function of the school, because they are general in their scope and affect all alike.

Mr. HENDERSCHOTT. All that can be done in the school, but we still have to continue it after pupils come from the schools. However, in New York, we hope to establish connections. We are working very closely with the schools there in an effort to work out something that will prove fairly satisfactory. That is under the subhead "Vocational." You see it is just the same, no matter what the industry.

The third subdivision is knowledge; and there we have to subdivide it up into A and B, A being general knowledge and B being specific knowledge. So you see five-sixths of your proposition is the same; and it matters not what line of industry you are in, your general knowledge is just the same. That is the knowledge that the boy or girl, or the man or woman, should have before they come into the industry. Now there is an interesting point there—and let me say right here that I am not a critic of the public schools.

If the public schools are not so good as they might be, there are, however, many people who differ with the public schools who have not given to them as much as they might give. We have become too interested in making money. There is no doubt of it at all.

We had about 550 employees in the contract and inspection departments of our sales division. We reach about 200,000 customers. We have an average of 25,000 telephone calls a day from the public, and we carry on this enormous business in New York City through this department. We handle all complaints in this department. We have specialists on power questions; we have specialists on all sorts of questions

As a matter of fact, if a man is operating a plant, or an institution is operating a plant, and they would like to satisfy themselves as to whether it is cheaper to close down that plant and take our service, or cheaper to continue to operate it from their own operating plant, we will send a corps of trained engineers, all college trained men, and they will make a detailed examination of the whole proposition and submit a brief without expense to them. Sometimes it is in their favor, and sometimes it is in our favor. But we submit it to them. Take churches, for example: Thirty-four in New York in the last year have changed their lighting system. Their lighting system was bad. Sometimes unprotected lights would stare you right in the face as you were looking at the minister. The glass was not even frosted, you know, and all that sort of thing. Take the National City Bank, which is one of our big contracts. We had three men stationed there night and day for a period of two years, and we succeeded in reducing their light bill one-third. You will say that it is not to our interest to reduce their light bill, but it is. And then, again, the lamp has been changed so very rapidly. We had the old Gem, and we had back of that the old carbon lamp, and then we got the Tungsten lamp, and now we have the type of gas-filled Tungsten lamp, which requires one-third of the amount of current to give you the light of the old Gem lamp.

When we started our regular school, our commercial school, we found that 28 of our candidates who took the first year's examination had the right attitude about their work, but we were confronted with this trouble—either discharging that 28 or trying to correct the troubles that they had. In our first year we give the history and development of electricity. Interest in industry is always based on knowledge. Therefore we like them to have a knowledge of how the electrical industry developed. Then we have them study other forms of power and so on. And then we give what we call a high-brow course for the boys. This course consists of efficiency and courtesy. What constitutes individual success is another one. And then we have another course, effective speaking and the business letter. Now they could not pass examinations in those courses. Their fundamentals were bad.

We were therefore confronted with the necessity of discharging those 28 people because we can not render such service as we must render with untrained people. A monopoly is not looked upon fairly. Everything must be done that can be done to satisfy the public that the monopoly is not such a bad thing from their standpoint. So we established a course that we call our preparatory course. Now both the high schools of New York and the elementary schools stand ready to take that class over and send teachers in to conduct it. In fact, there is where we encountered difficulty. Neither of us would give way to the other, and before the matter was settled we had

started the course ourselves. We are teaching it with our own people. They are college graduates, but they are not especially teachers.

Mr. BLEWETT. The printers' union has an arrangement that requires apprentices to attend courses that are given for their benefit. Now, of course, I do not know whether you are unionized or not, but the printers' union is standing for just that sort of thing.

Mr. HENDERSCHOTT. We have a great many union men. I guess that perhaps a good many of our men belong to the union. But, of course, the industry is not unionized—the electrical industry.

The CHAIRMAN. Just what was the nature of the mistake that you have spoken of that was made at the time when these high schools offered to come in there?

Mr. HENDERSCHOTT. I do not know exactly. I think we made the mistake of being a little too jealous of our own prerogatives. I think we should have let the schools come in and take over that work. Favorable public opinion came from the fact that many of those who had been handicapped and who came in and took up the school work, began to advance. I have in mind, for instance, a man who was simply a solicitor out on the street, soliciting contracts of rather a minor nature, a man of 54 or 55 years of age and without a good foundation. He had come to a standstill, but he wanted to get ahead—he felt that he had gone as far as he could. He came in and asked for the privilege of going into the course, and to-day that man is manager of one of our departments. Just see what that means among his friends as a factor for creating public sentiment toward our school. Now that is only one of many cases throughout the city.

The CHAIRMAN. Is your school now operated entirely by the company, or does the public board of education enter into it?

Mr. HENDERSCHOTT. Not at all, except that members of the board of education, or rather the association of city superintendents, lecture in our courses. Dr. Straubenmueller comes and lectures there.

The CHAIRMAN. But the board of education does not pay the salaries of any of the teachers?

Mr. HENDERSCHOTT. No; it is all paid by the company. That is our commercial school.

Mr. BLEWETT. That seems to be an incident that deserves all the publicity that can be given to it. I do not see why you object to it.

Mr. HENDERSCHOTT. We do object to two things. We object to our educational work being referred to in any sense as philanthropic, because it is not. There is not a particle of philanthropy in it. It is the best money we spend.

Mr. FISH. I think that is the danger we are always up against. If we get any advertising out of our work it is apt to be misunderstood.

Mr. BLEWETT. If you are going up on the housetops to proclaim

it, yes; but I do not see but what it would be all right to say this is the actual experience of a great commercial concern.

Mr. HENDERSCHOTT. Our company takes the position that we would rather not get any publicity from it directly.

The CHAIRMAN. That is one of the criticisms against corporations that are doing this welfare work, educational work—they might do it for advertising purposes.

Mr. HENDERSCHOTT. That has been lodged against us pretty strongly.

We have a technical school. It was more or less indifferently conducted by a committee of the employees' association, although financed by the company, until this whole movement took on a new life about four or five years ago. And then our technical school is virtually conducted, so far as the teaching of it is concerned, by Stevens Institute, through Prof. Stockwell, but it is all done in our schoolroom. We have a regular schoolroom, a regular laboratory, recitation room, just like this one, only much bigger, blackboards, and everything else. Prof. Stockwell directs that course entirely, but all of his 14 assistants in the course are employees in our company, practical operating men, and all college men.

Mr. FISH. May I ask if you hold your men after completing the course?

Mr. HENDERSCHOTT. We find that we hold our men. Our loss is less than half what it was before we commenced the work. We do not, however, make electrical engineers.

Now, referring to the advertising point of view, Dr. Hess, of New York University, took strong exception to the way we were conducting our commercial school. He said, "You will never make any of those men advertising men or sales managers; you do not complete their education." I said, "That is not our object. What we want is to make them valuable employees. We have only one sales manager and one advertising manager, and both are good ones, and it would not be to our advantage to do that." Stevens Institute, Pratt Institute, and I think Columbia—I am not positive as to Columbia—and the Cooper Union will give credit for the work done in our technical school just as if it were done in their classrooms.

Mr. FISH. Can any of those institutions turn out men and say they are sales managers and experts in publicity and advertising? In my opinion none of those schools can possibly turn out a man and say that that man will be a sales manager.

Mr. HENDERSCHOTT. In our accounting school, I might say, out of about 6,000 we have some 400 this year. In this school we begin one year further down than the New York University and we end one year below where they stop. If they have their State regent's marks, New York University will give them exactly the

same credit for the work done in our' accounting school as if it were work in the New York University. Prof. Madden, of New York University, conducts the work. The work is all done in our classrooms and the company pays all expenses, including the fee to each of the professors—Prof. Stockwell and Prof. Madden. If you can get a certain rating, passing marks in our three-year work in the accounting school, then you can go to a night school in New York University and complete the last year's course and get the degree as certified public accountant, providing you have the State regent's marks.

Now, let us return again to our commercial school of 28. Here we gave examinations. Let us take the one in commercial geography. We consider that they have to understand commercial geography, especially of New York State, and perhaps a more general knowledge of the United States. One of the questions we asked on this examination of the class of 28 was this: Name the three largest cities in New York State outside of Greater New York and give one interesting fact about each of the cities. None of the class answered the second division of the question. The answers to the first division were interesting. For example, one girl, who is a stenographer—she is still with the company; she is a good stenographer, doing a rather routine line of work in one of the district offices. Most of her letters are pretty much the same. She answered the question with Philadelphia, Buffalo, and Massachusetts. Now, that seemed almost incredible to me, because the girl was doing fairly good work. There had been no complaint from her manager. She was a graduate of the elementary schools of New York, and had six months' training at a business college. We also found as a result of that question that rice was the principal farm product of New York State, and that both the Yosemite Valley and the Rocky Mountains were in the western part of New York State. I was rather surprised to learn that the Erie Canal was dug to get a more direct route to the East Indies. And there were other answers equally absurd. I thought they were trying to make fun of us, but we found that they were in earnest. We worked on that class, perhaps indifferently, because we are not teachers. It is one thing to know a thing, and it is another thing to impart it in such a way that the class will catch it. One of our instructors is a graduate of Denison University, and was instructor in a college in Kentucky for about a year. He is a practical operating electrical engineer. He is our instructor in charge. The other teacher in the class is a graduate of Smith College. I do not think she ever had any experience as a teacher. We were able to get 14 of the 28 above the passing mark. We take up in that course in addition to commercial geography, history, arithmetic, grammar, civics, and physiology, and review them.

Mr. SNEDDEN. Why do you take those subjects?

Mr. HENDERSCHOTT. I do not know that I can answer that except that they seem most important to us—most important to our work.

Mr. BLEWETT. You mean United States history, I suppose.

Mr. HENDERSCHOTT. Yes, and we study commercial geography. There are very good textbooks on that subject. I find these textbooks treat more of the immediate vicinity and not so much of general geography. They go more into farm products and specialize more on New York State.

We took up civics because we felt that our people should have some civic pride and some civic knowledge. We review the different forms of government—Federal, State, and municipal—the different forms of government and their functions. Fourteen of those people were able to pass the examinations and they all went into our first-year term, and all but two of them were able to stand their examinations. I found, however, that we ought to have four years to give that preparatory course, rather than one year of seven months. It would take four years to give it as thoroughly as we think it ought to be given.

Mr. FISH. How long do they have?

Mr. HENDERSCHOTT. Seven months, an hour and a half a day. That was the recitation period.

The CHAIRMAN. That is on company's time?

Mr. HENDERSCHOTT. Yes. They had to get those subjects in that time. It is a tremendous problem. Still, it was either doing that, the best we could, or dismissing them.

Mr. BLEWETT. You have got to let the schools help you on that.

Mr. HENDERSCHOTT. No doubt of that. If we dismiss them, that brings about a difficult problem. Some of those people were 23 and 24 years old, and if you discharge them you are simply creating a large floating, undesirable population that must be given consideration.

Mr. SNEDDEN. Dr. Blewett asked if the schools should not help you on that. The schools failed eight years ago.

Mr. BLEWETT. I take it that these people that you are speaking of have not had much schooling.

Mr. HENDERSCHOTT. There were some that had not gone beyond the sixth grade, and there were three or four of them that went to parochial schools.

Mr. SNEDDEN. That would explain about a great many of them, but how about those who had been graduates?

Mr. HENDERSCHOTT. Most of them were grammar-school graduates or common-school graduates.

Mr. COOLEY. Did you have all of those subjects every week?

Mr. HENDERSCHOTT. Two each week, and each teacher had 45 minutes.

Mr. COOLEY. You did not have recitations in arithmetic oftener than once in two or three weeks?

Mr. HENDERSCHOTT. They would only have recitations in arithmetic when they completed it. And then we would hold two examinations before they got their certificates.

Mr. FISH. In order to do that in that time they must probably have a good grounding in the public schools. Do you review it?

Mr. HENDERSCHOTT. Yes; we review it.

Mr. BLEWETT. That is my point exactly. There must be a realization that however well the school may have done those elementary things they are soon forgotten. I am getting exactly the same statement here that I got in answer to a question I sent out among the great business concerns of St. Louis, i. e., that they did not want and did not expect preparation in their particular work, but they wanted these elementary things in good shape when they came to them, that they emphasized rather the character side, good mental habits, good moral standards, and ideals, and that they realize that the rest of it must be done by them; that is, you first take the people into your place. You have to take the training that we have given these youngsters, and utilize it yourselves in the direction in which you want it to go; but you have got to do just what you are doing in your company. There has got to be a school of some kind or other in the factory.

Mr. HENDERSCHOTT. Here is one thing we did that I would like to have the opinion of you teachers on. That includes Mr. Fish, as he used to be a teacher. I never taught in the public schools or any other school. I do not know whether the thing we did was desirable or not. From our viewpoint it seemed desirable. We told our people that we did not care whether they remembered dates in history or not, and we did not care especially whether or not they could give the names of generals. We would only ask them in our examinations to give us information that would be convincing that they knew how the United States had developed, but if they could not remember the date of this and the date of that, could not remember the date when the battle of Yorktown was fought, or who the commanding general was, we would not throw them out. Well now, that may seem funny to you—

Mr. BLEWETT. I think we could employ him as a teacher.

Mr. HENDERSCHOTT. We thought that was a very good thing. We wanted them to know there was a Revolutionary War, what caused

the war, what the results were, how the war was conducted, and what happened as a result of the war. It was such things as that we wanted them to know.

Mr. COOLEY. Did you find that an hour and three-quarters subtracted from the service of the company affected their work unfavorably?

Mr. HENDERSCHOTT. I am glad you asked that question.

Mr. COOLEY. Don't you think it would be of advantage if, in any way, you were able to make that six hours a week?

Mr. HENDERSCHOTT. We could do that if we were only taking that one class, but we have 15 courses, and it gives us a class every day in the week except Saturday.

The CHAIRMAN. Dr. Cooley's question does not refer to that particular point, as I take it?

Mr. HENDERSCHOTT. Yes, if we could give six hours a week it would be to our advantage to do so.

Mr. COOLEY. I think six hours would mean four times as much, and more than four times as much. The chance to concentrate in a given space of time is better.

Mr. HENDERSCHOTT. We take a boy or girl in an examination—and we hold them almost every other week—some little quiz examination—if they fall below 85 in that particular examination, which does not count in the final rating, we ask that boy or girl to go to the Bureau of Education, and the instructor of that particular class works with them personally. You will find some of those employees there almost all the time. For B we rate from 82 to 90, and for A from 90 to 95. We do not rate above 95.

Mr. FISH. Why do you mark them at all?

Mr. HENDERSCHOTT. We give them a certificate which corresponds in some degree to a diploma.

Mr. FISH. Do you pay any attention to those particular marks if you are promoting a man?

Mr. HENDERSCHOTT. Yes, we pass on their school records, their late and absent records, their time in service, and their general qualifications, and not only our promotions, but all salaries are based on that.

Mr. FISH. Then you are not in the boat that I am in, when they come around to me and say, "Fish, can't you give us somebody to take this job?" I take the man that I pick out as being the best through personal acquaintance. Now, I have some percentage marks somewhere, but I can not remember that I have looked at them.

Mr. COOLEY. I regard the six-hour proposition as the minimum time that will enable you to accomplish much along so many lines.

Mr. HENDERSCHOTT. I think you are right. They do get an hour and a half. Miss Miriam is the particular instructor in three of those

subjects—two of them rather. Mr. Grandstaff is in charge of civics. Perhaps to make it a little clearer to you I might state that in addition to this preparatory course we have a first-year course. I am sorry that I did not bring one of our booklets that has all this printed in it. I should be glad to send it to any of you.

We have four courses in our first year's course, the history and development of electricity. The object in that is simply a psychological one, to bring about an interest and enthusiasm for the things we understand. The history and the development of electricity is intensely interesting. I do not care whether they remember just what Mr. Watt did or what Mr. Ohm did or what any one else did, but we do like them to know about the development of electricity. We do not care whether they get the exact dates. We teach it in the form of ten lectures. If they know the history and development of electricity, they are better able to serve the public than if they do not. Then we have the elements of the central station. There is the comparison of electricity with other forms of power, the comparison of electricity with other forms of lighting, and so on.

Then we give the course that we call the individual-efficiency course, where we teach the commercial value of efficiency and courtesy. Probably nothing is of so great value as courtesy.

And lastly we have a course on effective speaking and business letter writing. These courses are based on textbooks that we consider to be very good.

The CHAIRMAN. Do you determine at the time you hire them that they must go into one of those courses?

Mr. HENDERSCHOTT. Every one has to go into one of those courses, whether they are college graduates or not. It does not make any difference. We tried out a lot of college graduates and none of them could stand an examination covering the first year's term and get a rating. None of them standing the examination got any rating. It is desirable for them to have a rating, both from their standpoint and the standpoint of the company, and they take the first year's course.

Mr. FISH. Is there anything that the public schools could not do for you if they saw fit?

Mr. HENDERSCHOTT. I hardly think you would be justified in asking the public schools to put on the course in the history and development of electricity.

Mr. FISH. Wouldn't there be enough people in the public schools in New York interested to amply justify that?

Mr. HENDERSCHOTT. I am sure the public schools in New York would furnish the teachers; they are doing it in other lines of industry. But our company has felt that we would like to retain that prerogative for the present for ourselves. In the first place they fear that

we would incur some unjust criticism in asking the public schools to do it, as the public schools are suffering from a cut in their budget which has compelled them to cut down many activities more general in character, so we have not asked them to do it. I think they would do it. They are doing it in many other communities.

Mr. BLEWETT. The value that you placed upon courtesy put it at the top. How about integrity?

Mr. HENDERSCHOTT. Integrity of course is of equal value, but courtesy is a thing acquired. A person who lacked integrity would not get very far. His attitude would be wrong. He would be sent back to our training school where his attitude would have to be changed or ultimately we would ask him to resign.

Mr. FISH. That is a thing you assume. You would not mark them on integrity?

Mr. HENDERSCHOTT. As a matter of fact, we have very little trouble on that line.

Mr. BLEWETT. Your estimate is of high value. Courtesy is something that can be acquired?

Mr. HENDERSCHOTT. The average boy and girl lack courtesy much more than they lack integrity.

Mr. FISH. Do you have a school for telephone operators?

Mr. HENDERSCHOTT. Yes; we have a school for telephone operators. They ask the nature of the call, "Whom do you wish to talk to?" You name the bureau you wish to speak to, and you are referred to the man in charge. Someone comes to your house and scratches up the lamp on the table, and it is immediately referred to Mr. Boyd or Mr. Humphrey, or there is a complaint about the motor power, and it is immediately referred to the motor department.

We have a school for the office boys. You know there is a wonderful psychology in showing a man into the office; for example, whether you open the door and walk in ahead of him and then turn around, seemingly saying, "You are in the office, hunt for the man you want," or take the man over to the desk and say, "This is Mr. Henderschott." There is quite a difference in your feeling. So, we instruct them in that; we make them take their instructors over and introduce them. We teach them to whose desk in each office to take visitors. It may be a small matter, but we think it is very important.

Mr. FISH. It is a big matter.

Mr. HENDERSCHOTT. In the second-year course in the regular school we have hygiene and health and elements of psychology. In that course we hire the best psychologists we can. We have Dr. Bish, of Columbia, Dr. Hollingworth, Dr. Walter D. Scott, Dr. Hugo Münsterberg, and others. There is also a course in salesmanship. That is a peculiar thing, because salesmanship is not found in the last revised edition of the dictionary, and when attempting to de-

fine it, it perhaps is hard. We define salesmanship as the human elements that enter into marketing. It is a good proposition. We have the very best authorities we can get on that subject. We have Dr. Walsh, and we have Dr. Luther H. Gulick and others who are authorities on that subject. We teach the means of getting health and getting the best out of a vacation, and other things, and we teach industrial ideals. And there is a constructive course. They are simply trying to broaden the human mind. And then we have a final course, which is intensive study of the organization of the company, the needs of the various heads and subheads and so on right through, the functions and duties of the different departments and how they dovetail in.

Mr. FISH. Do you put them at work in any of these departments?

Mr. HENDERSCHOTT. No; they do not go into any of the departments other than their own. When they complete that course they get a certificate. If it is an A certificate it has a blue seal; if it is a B certificate it has a red seal; if it is a C certificate, it has a yellow seal. When they get an A seal, which is a rating of 90 or better, we give them a button, which has the Edison seal on it. You have perhaps seen it. We have a trade-mark, the Edison seal, and the letter A. It is a solid gold button, and perhaps costs \$5; but the people who have that button we regard as minor executives. The intrinsic value of it is small, but its real value perhaps can not be estimated. We feel that any man who has that button is capable of becoming a general manager, if he is of sufficient age to have had the experience in any central station in a town up to 100,000.

Then we have a course on personal hygiene for the women employees of the company. That is given by a woman doctor, who is a graduate of Dr. Sargent's school at Cambridge. She has had experience for two years as physical instructor of the girls at Swarthmore and in Philadelphia. We do not go into the sex question. We do not go into questions of things after marriage. But she teaches them how to take baths, why they should take baths, the care of the hair, teeth, and feet, and all such things that are important.

Then, we have a course on effective speaking. That is the only course that is not compulsory and that is not on the company's time. It is in the evenings. That is perhaps the most interesting course we have. We teach effective speaking, and after we have taught them in a series of eight lectures, we subdivide the whole subject into eight subjects and teach efficiency. We have several sessions devoted to the practice of it, and they are perhaps the most agreeable sessions they have ever worked in. Some who are 60 years of age take it. They meet, and they all have pencils and papers and they watch you closely, and if you happen to stand on one foot

while speaking, or scratch your nose, they will tell you it is not a good thing to do. One fellow says it reminded him of a play of Dumas or Shakespeare, where every one was beheaded, and he was waiting for his turn. This man said he could not get anything in his mind that night except that play, waiting for the time when it came his time to go through the ordeal. He was a graduate, a 60-year old graduate of Yale, and he made a rather pitiable appearance. Since then he has made good. If a man can speak effectively in public he can speak effectively in private.

Mr. SNEDDEN. But you expect to have him speak effectively to anybody in private?

Mr. HENDERSCHOTT. Both that and in public. We have many requests for speakers.

Mr. SNEDDEN. But taking the rank and file of your employees, it is with that end in view, just as you explained about the telephone girls?

Mr. HENDERSCHOTT. Yes; that is right. We get them to organize their facts and present them with as much force as possible.

We have a course for our stenographers. The same psychology applies there. A well-written letter that gives just the details they want, gives it courteously, is well spaced, is neat, is just about the same as a person being properly dressed.

Mr. SNEDDEN. You do not teach stenography?

Mr. HENDERSCHOTT. No.

Mr. SNEDDEN. But what you want is a particular type of letter, to have a particular type of mind in your correspondence.

Mr. HENDERSCHOTT. And further, we want them to realize the possibilities of their position. The average girl feels that her possibilities are just to make certain characters with a lead pencil.

Mr. SNEDDEN. Couldn't the business school do that just as well as the company?

Mr. HENDERSCHOTT. Yes, to a large extent. We teach this from the standpoint of efficiency. We pay our girls whether they are sick or well, and we therefore feel we have the right to do this thing. It will surprise you. I am asked not to give out the details. It would surprise you, the difference in absence on account of illness since we have taken up the course and before we took it up. It would surprise you to note the difference in dress. We used to have girls come in so attired that you would think they had not the time to change their dress after having been at a fancy ball. They had big beads that hung around their necks and two or three spangles around their arm, constantly in the way in their work; and now you see girls come in dressed entirely for business. They will be told, "You can not get ahead in your business. You are handicapping yourself in favor of the girl who dresses herself differently

and takes better care of herself." We do not ask them to wear white, or to wear black, but we do ask them to come dressed for business. The doctor points that out to them.

In each office we have a chief record clerk, who keeps a monthly record of the times that a person has had to be reprimanded for handling the telephone contrary to instructions. Now, their instructions are virtually made up from the best information we can get from the American Telephone & Telegraph Co., who have very extensive schools. We get all that they teach, both commercial and technical. And then we get the examinations from the telegraph operators' offices, which is virtually the same thing. Then we teach our own ideas of the importance of the telephone. All of this is taught. And we have a committee under the Bureau of Education. In each office there is this one person.

Now, we have a personal record of everybody in the department. In that personal record we have their ages, what education they have had, what experience they have had elsewhere, and all of those things. Then we take their characteristics. We compile that record and we make a report of progress on it about every six months. No manager in our department can discharge. Any manager can send an employee back to the training bureau, but he can not discharge. The efficiency of the manager is determined by the number the managers send back to the training bureau.

The CHAIRMAN. I am sure we are all indebted to you, Mr. Hendershott.

We have a few minutes to hear from Mr. Fish on the same subject of corporation schools.

CORPORATION SCHOOLS.

By E. H. FISH,

Employment Manager, Norton Co. and Norton Grinding Co.

Certain portions of the educational problems of any nation are readily seen to be universal in their application. It is necessary that every citizen should be able to read and understand the official language of his country and be able to perform simple mathematical problems and understand the weights and measures and the monetary system which prevails. As educational facilities increase, however, the time soon comes when the question may be fairly raised as to whether or not certain special and technical knowledge should be imparted under Government direction or whether it is a part of the employer's business to train his employees for the more intimate details of his work.

In the professions it has become possible in many States for a citizen to demand and secure a full training from infancy to the point where he can stand by himself, in a modest way, in his profession. In some places the Government is providing means of training young people in some of the more common trades, and doing the

work with considerable effectiveness, but it can not be expected that the public will interest itself in training people for those industries which are highly specialized and in which many of the processes are regarded as more or less closely-guarded trade secrets. Such conditions must be met by the industries themselves. When such training is done in a systematic way it is often called school work, and the organization doing the work is called a corporation school. The name is poorly chosen, for the best of these organized plans of training have little in common with schools as they are usually understood, and they are not by any means limited to corporations.

These schools, to use the term which is usually applied to them, are very varied in their scope and difficult to classify. It is only possible to define certain types which, when modified to suit the conditions of the individual business, have been found practicable.

Industrial activities may be broadly divided into production, administration, sales, engineering, or design.

For each of these divisions an entirely different type of school is necessary.

SCHOOLS FOR TRAINING IN PRODUCTION.

A very few cities have trade schools publicly supported. A few others have similar schools supported by philanthropy. All of these schools together do not produce enough skilled workers to sensibly affect the problem as a whole. They are extremely desirable from the point of view of the prospective worker, and if they were sufficiently numerous they would be a great help to the employer, but at the present rate of increase it will be many years before they will do more than prove the possibility of teaching trades in schools. Workers for skilled and semi-skilled trades have been recruited from Europe where systematic training is common. This source of supply is for the time being shut off, and it is problematic when it will be open again. It is entirely possible that the upbuilding of that continent will so increase wages that we shall see no more desire to emigrate to the Western Hemisphere.

Under these circumstances it is no wonder that manufacturers are looking more carefully into the question of training their own workers than ever before. The old apprenticeship system has probably gone forever. It is being replaced by a form of training which combines practice in shop work with a study of the methods used and their reasons, with enough mathematics, drawing and science to give the pupil an intelligent idea of what he is doing. The organization of these schools ranges from one in which the young workers are sent to some outside school for a few hours each week for instruction in mathematics and other academic subjects to one where the pupils are under the care of foremen especially selected for their ability to put something into men rather than get production out of them. Here the classroom work is correlated closely with what has been done or is about to be done. In the first instance the school training is usually given by teachers whose principal duty is ordinary school teaching, and who have little or no idea of the industry for which the boys are being trained. Such work is truly continuation work, that is, it is a continuation of the work which they have previously had in the public schools rather than specialized work for the industry in which the pupils find themselves. The other and more specialized type of school recognizes that intensive study of the art of production unhampered at first by the necessity of actually producing a product of any considerable value leads more quickly to the point where effective production commences than any of the more protracted methods. This, however, presupposes that the candidate is mature enough to realize that the work which he is called on to do is for his own benefit as well as for the benefit of his employer.

In order to carry out this program it is necessary to set aside sufficient equipment so that for a considerable time the beginner can be entirely separated from the producers. There must also be a sufficient number of foremen instructors to see that almost every

move the pupils make is correct. These instructors must instruct. It is far easier for most skilled workmen to do the work themselves than to show others how. Such men must be returned to the production department and replaced by those who have the patience to see that their pupils learn to do, no matter how awkward they may be at first. It is also necessary that the work be more carefully graded as to difficulty, and new operations, than can be possible in the production department. It is necessary that each new job should emphasize the points already learned from previous ones and also lead up easily to some new ones which are more readily grasped. The length of time spent on each class of work should be such as to make it possible for the pupils to do it "habitually well" rather than to merely teach them "how" to do it.

Classroom work for the production school is usually limited to that which will be immediately useful on the job for which the pupils are being prepared, and to that extent may be narrowing in its nature. But for that matter higher training along mechanical lines is hardly broadening in its effect. So much progress has been made of late years that it seems to be almost impossible for a young man to fit himself to deal with mechanical problems before he must earn his way unless he concentrates on the objective which he has chosen. Thus in all mechanical lines it seems to be left to the man himself to so order his life that by reading or by contact with other men he may become a broad-minded citizen. Some few shops are keeping this in mind and adding courses in citizenship. They are teaching their men the proper relations between man and master, capital and labor, and endeavoring to show them that what is for the interest of one is for the interest of both. Mindful of the fact that few or no troubles have occurred between them and their well-educated employees, employers are hoping that by this process they may be able to lessen the friction which is an all too prevalent part of modern business life.

The most commonly taught subject in these schools is mathematics, which usually consists of a review of arithmetic with the addition of a little geometry of construction and a little trigonometry. The review of arithmetic is necessary not so much because the teaching of that subject in the public schools is defective as because the graduate of the public schools does not recognize problems as they come to him in business. There are few if any textbooks available to the public school-teacher that state problems as they are stated in the outside world. There problems are not set up by themselves, but the data to be used has to be disentangled from a great deal of extraneous matter. Again, examples in textbooks usually come out even because the answer was used as the starting point in making up the problem, while in the mechanical world most problems refuse to lend themselves to any such happy conclusion. Problems are stated in improbable terms. For example, hardly any industry uses feet, yards, and inches at the same time. Measurements in the building trades are given in feet and inches, the surveyor uses feet and decimals, dry goods manufacturers use yards and vulgar fractions of yards, and so on. These conventions are almost entirely ignored. The pupil must first of all learn the conventions of the industry in which he is working, and then he must learn to recognize problems when stated in the language of the industry. Probably every boy of 14 knows how many ounces there are in a pound, but when an examination was given to a number of applicants for a position in a shop in Connecticut in which the question was stated, "How many ounces are there in a pound of steel?" only two in 15 of the applicants could tell.

The geometry which is needed in most industries is that of construction, and only a very few geometrical constructions find useful applications. Public-school instructors in drawing oftentimes teach as many as 50 or 60 such constructions while a dozen will cover the necessities.

Trigonometry is not ordinarily taught in the public schools at all, but it has numerous applications in the machinist and building trades so that if it were better understood, much gain would result. All that is necessary, however, is an understanding of

the right triangle and a few applications which may be made by considering other triangles as made up of two right triangles. These problems are easily grasped by pupils who find arithmetic a fairly easy study.

Drawing is commonly taught to pupils of such schools. Various attempts are constantly being made to teach the reading of drawings without teaching their making. Teaching drawing to apprentices is sometimes questioned on the ground that there is danger that they will wish to drop their trade and become draftsmen since it is a trade at which workers can wear clean clothes. If boys would thoroughly learn the machinist's trade and then turn to drafting there would be no objection, especially from other machinists who have to work from the drawings made by the nontechnical draftsman. The difficulty is that the boys are apt to turn to the draftsman's vocation long before they have acquired any decided bent for the machinist's trade.

If the instructor knows and can teach his pupils that the actual ability to make a drawing from a model or copy another drawing is only the most elementary part of the draftsman's art, he can keep his machinist's apprentices from changing their trade.

Reading drawings may be taught by the use of assembly drawings on which one view of a detail is pointed out to the pupil and he is required to outline with a pencil the corresponding views of that detail, or by selecting from a pile of parts of machinery the one which corresponds to a given blue print and then pointing out to the satisfaction of the instructor the different holes, bosses, etc., which the print calls for. None of these schemes, however, seems to be in any way more efficient than the actual teaching of the making of a working drawing. It should be said, however, that it is not found necessary to teach a pupil the principles of projection previous to having him make drawings of actual parts of machinery.

One of the opportunities which is most filled with opportunities for good, but which is most neglected, is that of planting the seeds of good citizenship. As we stated above, the better educated a man is the more apt he is to see the true relations between employer and employee. A college man is seldom a participant in labor troubles, not because he is well paid, for that is often not the case, but because he keenly realizes the expenses to which the employer is put and of which more poorly educated men seem to be totally unaware. A tactful instructor is able to bring up such matters in connection with his teaching of other subjects and make considerable progress toward instilling into the minds of his pupils some idea of the correct distribution of the margin between the cost of materials and the value of the finished product. That instruction may easily be worth the entire cost of maintaining the school.

This description of classroom work applies directly to such trades as that of machinist, cabinetmaker, pattern maker, etc., which require the use of mathematics and of mechanical drawings. The most work has been done along these lines, and it has been tried out most thoroughly. Other trades require variations. For example, drawing for an interior decorator is very different from that for a machinist, and his necessary mathematics is very limited. He is apt to divide a wall space in halves by doubling a string rather than by measuring and dividing by two. These variations, however, do not affect the general principles on which this work is done, but only the details under which it is carried out.

ADMINISTRATION.

Schools of administration may be divided into those which are most elementary and which teach the mechanical work of the office, and those which teach the principles of finance and the administration of large business establishments.

The elementary courses are specialized into schools of typewriting, stenography, bookkeeping, use of phonograph and comptometer and similar labor-saving office devices.

Some of these subjects, such as stenography and typewriting, are also taught in the public schools and in private business colleges, but the work is so apt to be superficial that many concerns are forced to train their own employees. The public schools, and the private schools, which are not attached to business houses, are under the handicap that they must show almost immediate returns. The pupil expects to be taught the complete art in so brief a period of time that there is no opportunity for the instruction to sink in. The corporation school is able to drill its pupils much more thoroughly, because the pupil is being paid while he or she is learning and therefore much more content to be thorough. There is no marked difference other than this between the methods of the corporation school and the public school. Both use practice on work which, if not actually used, might well be, if it is well enough done to be acceptable. The standards of acceptability are the standards of the commercial world, not of the artificial public-school world.

Other schools which may be classed as elementary are those which teach the routine office procedure of the corporation. These schools may consist of a mere arrangement for routing the candidate through different departments and divisions of departments for the sake of familiarizing him with that which precedes and follows the work which he is being trained to do so that he can do his work intelligently. This may extend so far as to include work in the manufacturing departments if that appears to be necessary, as it is in many cases, to a thorough understanding of the reasons why work is done certain ways in the office. All of this training should be accompanied by lectures or quizzes and made the subject of reports by the pupils so that their understanding of what has been presented to them may be checked up and any misconceptions cleared up before they become habits of thought.

If it is not felt that time can be allowed for the new office man or woman to go through a course of actual work in other departments, a great deal may be accomplished by trips through the factory and other departments of the office under the guidance of some one who is well informed and who is able to make himself interesting. This is reduced in some cases to a lecture with lantern slides illustrating different stages of manufacture. This, however, is only better than no instruction at all. Very few of us learn with facility from illustrations which appear in only two dimensions. If it were possible to use stereoscopic views which would give some sense of distance, lantern slides or moving pictures might very probably be used to much better advantage than they have been as yet.

Advanced training for the executives usually takes the form of courses of study given by outside institutions of which Alexander Hamilton Institute is an example. Such work can only be classed under the head of corporation school work when a group of men take up these courses by working on them together under the leadership of some one of their own number.

An efficient executive must of necessity be a man of broad training. It is very natural to promote men to executive positions from those which have been narrow, in which case, any form of training which has a broadening effect is valuable. Such a man may be expected to have an intimate knowledge of the details of the business but he very likely may be lacking in diplomacy, knowledge of general business principles, ability to analyze financial and other reports. He may need a working knowledge of legal matters relating to property and employment, credit, advertising, and other phases of business.

Knowledge of this kind may in some measure be gained by selected reading on psychology, self-development, speaking, industrial law, and history, and technical study in his chosen line. He should by no means neglect political and economic questions as they arise. He must not allow himself to become so engrossed in his own immediate work that he can not keep a broad outlook on business as a whole. So far as it may be classed as school work, corporation schools for executives offer reading in economics, commercial law, organization, principles of efficiency, management, cost

accounting, accounting practice, auditing, money and banking, corporation finance, foreign exchange, investment and speculation, real estate, insurance, etc.¹

SALES AND ENGINEERING SCHOOLS.

Colleges and technical schools are graduating large numbers of young men every year. They find it difficult to bridge the gap between school life and business life. The large manufacturers of electrical machinery were among the first to realize that these graduates need only proper handling, supplemental to their school training, to become in a few years very valuable men. They have been so successful that other large employers have created schools for adapting college graduates to their business. These consist generally of a course of study and work in such departments of the shop and office as have a bearing on what will be required of the young man. If the aim is to produce a salesman, the shop training will usually include only those departments which visibly affect the quality or appearance of the finished product, and the office training will be pretty complete. If the course is for engineers, or designers, the office work will be largely omitted, and the shop work will thoroughly cover every department in which the factory differs from the standard which was set before the pupil in college. In addition to this training in the technicalities of the business, courses in salesmanship, consisting of lectures, quizzes, and in some cases demonstration, and practice, are offered. All of this is supplemented by training in the dictation of letters, the use of correct language, and the psychology of selling.

The training of a salesman can never be considered complete. No matter how thorough his preliminary work, it is necessary that he should not only be followed up in the field, but he must be brought back to the factory or home office and given a course which will refresh his loyalty, bring his information up to date as to new products or changes in old, and acquaint him with the difficulties under which the management is laboring, and which it is easy for him to forget under pressure from his customers.

This may be done by calling all the representatives to the home office once a year for a few days, during which the time is divided between the reading of more or less abstruse papers and social activity. There is always present, however, the danger that the social side will so overshadow the educational that the latter may be entirely lost. A better plan for many purposes is that of bringing in the representatives in small groups for a longer period, and having them take part in the actual shop and office work so that they rub elbows with the producers, and get a taste of the difficulties which they must meet.

CONCLUSION.

Corporation school work is growing, but only as the necessity becomes vital to each concern. There is a tendency to expect more of public schools in the way of preparation for business than is reasonable. The public schools, colleges, and technical schools content themselves with teaching with principles which are fundamental to the different trades and business occupations, and business houses must furnish the detailed training which is peculiar to their branch of industry. More and more employers are, however, feeling the pressure of circumstances and the scarcity of trained workers from top to bottom of the plant, but better than that, an ever increasing number, seeing that they owe it to themselves, their employees, and the world at large, are beginning to train their men of their own accord, instead of waiting until circumstances make it necessary.

¹ From a paper by C. R. Sturtevant, educational director, American Steel & Wire Co., at the first annual meeting of the National Association of Corporation Schools.

Mr. BLEWETT. What is the place of free-hand drawing in the public schools?

Mr. FISH. Free-hand drawing should be taught in the grammar schools for recreation and appreciation only.

Mr. BLEWETT. I know we have not reached the results that we desire, but certainly the pencil ought to be an instrument of expression; the children ought to be able at the end of the grammar-school course to use the pencil as a means of expression.

Mr. FISH. Suppose you were to continue teaching in the secondary schools interior decorating as a trade, would you consider the pupil who had taken free-hand drawing in one of the public schools better fitted than the pupil who had not taken it?

Mr. BLEWETT. Oh, unquestionably. Why not? It depends upon the teaching, of course. In poor teaching, you would get a poor result. But as I say, the pencil should be a means of expression for the child; he should be able to express himself with equal facility as he would with the pen. It should be a natural mode of expression.

Mr. FISH. Do you think we can develop an artistic sense in the grammar grades?

Mr. BLEWETT. I think we can show throughout the country that we have.

Mr. COOLEY. It is a curious fact, but I saw an exhibition of a lot of work done in one of the schools by pupils of the third or fourth grade which was beyond the average of what they did in the seventh and eighth.

Mr. BLEWETT. I think that one of the commonest explanations would be that we are doing better teaching down there, teaching the child with less hampering on the part of the teacher. That is, we use the brush and the pencil there as a natural mode of expression. As we advance we become too conscious of the restrictions that the teachers place upon us. I think that is a conclusive answer to your question.

Mr. FISH. My experience has been in teaching architectural drawing that we find that those who had been sent to us as being extremely good subjects because of the work they had done in the public schools, fall considerably behind those who were not given any instruction at all.

Mr. BLEWETT. We get the same thing with English. We have college men who do not know what to do with secondary English, and who do not know that boys and girls can come out of the secondary schools with a command of English that a good many of us did not have when we left college. They should have an appreciation of literature and an ability to express themselves in language. You see college men condemning the English that comes up from the secondary schools. They should put themselves in the attitude of

familiarizing themselves with what secondary schools are offering. You would then get a different result in my opinion.

Mr. COOLEY. I can remember when the college men offered that same argument against chemistry and physics and said there should be more Latin and Greek.

Mr. SNEDDEN. Mr. Fish, if you had two or three hours in manual training work, would you expect that to be accompanied with ability to draw a sketch in connection with it?

Mr. FISH. I would feel that otherwise manual training might be considered as recreational. Take it altogether, it is really all manual training in a way. I feel that the fellow who takes our regular manual-training courses in the public school is not necessarily benefited if he is going to take up the serious study of a trade. I think he is benefited as an individual, but as a groundwork for any specific trade, I do not think that it has done any good.

Mr. SNEDDEN. If a boy has taken two years in manual training, is he helped when he starts out to be a tailor?

Mr. BLEWETT. I think you psychologists might say no to that, but I would say yes, sir; I should say that that boy who had two years in manual training in any of our schools certainly would be benefited when he took up the trade.

Mr. SNEDDEN. The trade of a tailor?

Mr. BLEWETT. Yes, tailor, and bricklayer, and any trade; he would be able to take up the trade with greater facility than the boy who had not had it. Let us hear from Mr. Harvey here.

Mr. HARVEY. I should say yes. It is a demonstrated fact.

Mr. SNEDDEN. I can not find any solid evidence of it.

Mr. HARVEY. It is a demonstrated fact.

Mr. FISH. It is entirely contrary to our experience.

Mr. HARVEY. It is not contrary to mine; and, furthermore, it is good, sound psychology.

Mr. SNEDDEN. I think it is not justified by any of our psychology.

Mr. HARVEY. What does a tailor need to know? What qualities does he need to possess in order to be a skilful tailor?

Mr. SNEDDEN. The tailor certainly needs to have skill at his trade.

Mr. HARVEY. He certainly has to have skill, the skill that enables him to do certain things accurately. That is true. He gets a certain kind of mental attitude in his two years of woodwork that lays a foundation for his being a good tailor, for it means accuracy when applied to something else. That is good psychology.

Mr. SNEDDEN. The psychology there is pretty obscure, I think. I do not want to go into it.

Mr. FISH. There is one place where we are apt to get into a disagreement, taking manual training, for instance, as producing habits of work. You know, the employer's most serious difficulty really is

in bridging over the time while the young man is getting away from the habit of going to school into the habit of going to work.

Mr. BLEWETT. I think you have got age there to help you out on that situation.

The CHAIRMAN. You have to have a motive, too, a new motive.

Mr. SNEDDEN. The motive is in the work, and the motive is in the wages earned. And he would want to hold his job.

The CHAIRMAN. That is not always fully aroused in the case of the boy.

Mr. SNEDDEN. I haven't the slightest doubt but that we can teach third-grade children and teach them better than we can at 16, and with better results. Now, with certain specific individuals—perhaps tailors, perhaps bookkeepers, perhaps machinists, going into particular lines—that is where we can get results, because we then have a direct motive. But, I am afraid of the moving picture, the vaudeville show, the music machine, and all those things. The fact is, our boys who have been through our schools and have studied music, on up to the high school, can not sing America or the Star-Spangled Banner. If they can not do it when they are 20 years of age, I do not know that you can teach them later. That is a matter of our social psychology. But I am pessimistic of getting beyond this point you mention of appreciation in the fields of music and drawing.

Mr. BLEWETT. I do not know just what results you are getting, but it may be that similar things are being done elsewhere perhaps better. We take our children who sing the classical courses in the high school, and certainly express them artistically with great joy to those who hear them, and with evident joy to themselves, and put them into a public concert with a symphony orchestra, take them into a relationship that they had not had before, and find that they do the work so well that the orchestra is carried beyond an interest per se to the work of the children. You get that sort of a result from the regular public school training in music. Now, that is where you get that sort of thing. We are not, certainly, going to suggest that music be eliminated from American life.

Mr. SNEDDEN. We have there one of the largest pedagogical questions, i. e., whether we can teach appreciation by teaching execution. I believe that a boy who has made one bookcase in a manual training class is more apt to appreciate good furniture after having done that.

Mr. FISH. But not necessarily make a better cabinetmaker.

Mr. SNEDDEN. Not necessarily make a better cabinetmaker, except the distinction and selection of good from bad.

The CHAIRMAN. I do not see why, having learned something about the construction of a chair, he is not going to be a better cabinetmaker.

Mr. FISH. In the manual training school you do it the way it is made in the manual training school, and the cabinetmaker may make it a different way.

The CHAIRMAN. I know, but he has had that training. He will make a better piece of furniture than if he had not had that training.

Mr. SNEDDEN. I do not advocate dispensing with teaching something about execution, in any art field, whether it be papering or painting or music, or anything in the field of art; I do not advocate dispensing with teaching some execution as a means of teaching appreciation. I do not advocate that. The teaching of execution means the teaching of appreciation. Why, for instance, I would like to have every boy in the grammar school make a suit of clothes, because I think he would have better clothes ever after. I would have him cook a meal, because I think he would be more appreciative of his wife's cooking. And so with other things. But when I come into drawing and music, the one thing wherein I differ with you concerns our effort to make all our children learn to play music, to sing, and to draw. It does not follow to-day that we can raise the standard of musical appreciation in this country at this time in dealing with our children from twelve years, the sixth grade, from twelve to eighteen years of age.

The CHAIRMAN. It is one thing to subscribe to the proposition to teach music, and quite a different thing to raise the question as to whether we ought to expect all boys and girls to exhibit genius in music.

Mr. SNEDDEN. I think that when we pass the sixth grade music should be on the side of the elective subjects.

Mr. BLEWETT. Do you mean elective in the high school; that the boy should be permitted to go through the high school without having done any chorus work?

Mr. SNEDDEN. A little chorus work does not hurt, but I mean that you should not devote a whole lot of time to it.

Adjourned at 5.15 o'clock.

SESSION OF SUBSECTION 10 OF SECTION IV.

PAN AMERICAN UNION,
Wednesday afternoon, December 29, 1915.

Chairman, ROGER W. BABSON.

The session was called to order at 2.30 o'clock by the chairman.
The following program was presented:

Commercial Education:

In Latin America, by Edgar E. Brandon.

In England, by I. L. Kandel.

In Germany, by Frederic Ernest Farrington.

COMMERCIAL EDUCATION IN LATIN AMERICA, A SKETCH OF ITS DEVELOPMENT AND PRESENT STATUS.

By EDGAR EWING BRANDON,
Dean of Miami University, Oxford, Ohio.

Mr. Chairman, and members of the Congress, it is a special privilege and pleasure to present to you in a brief form and more as a matter of outline than as a scientific investigation of the subject, the commercial education that is at present found in Latin America. The subject presents itself to my mind under three heads. First, the relation of commercial education to the older and more established forms of education. Second, an account of its establishment and development in Latin America. Third, the form of organization used in these countries.

As I think of the subject, two very interesting experiences come to my mind. The first was a public gathering, in the students' club of one of the well known South American universities where the major part of the student body was assembled to listen to an address by one of the favorite professors of the institution. The hall was packed with the élite of the nation; the platform was occupied by the officers of the student organization, a large number of the faculty of the institution, and many men of prominence in the public life of the nation. The address was on a philosophical, sociological subject, carefully developed and expressed in forms that were a model of public address. The audience listened with the closest attention, comprehended thoroughly the argument of the speaker, and generously applauded the points that he made. As I have said it was a philosophical address, the ideas were neither popular or picturesque, and yet that entire audience of young men listened with rapt attention. I doubt if the occasion could be duplicated in many universities of North America.

Much later I was reading a book on education written by the head of the School of Commerce in the capital of Bolivia in which I found the words I paraphrase as follows: "The young men in the commercial school will acquire knowledge, not merely to transmit it and comment upon it, but to apply it in a practical life." This statement made by a Latin American who had studied profoundly and traveled widely defines indirectly, but accurately the old type of higher education in Latin America,

and enabled me to characterize, as I had not been able to do before, the impression made upon me by the delightful meeting and the refined, eloquent address I had listened to at the student club.

I. THE RELATIONS OF COMMERCIAL EDUCATION INTO THE TRADITIONAL EDUCATION.

University education in Latin America (and when I use the term university education I include in it the usual high school education, which in a great many countries of Latin America is merely a prelude to the university professional career)—a university education, I say, is distinctly a cultural education. Such has been its history and such its tradition. The universities of the colonial times were founded on the model of the Spanish universities of the era of the renaissance, and they continued with marked fidelity the traditions of that age throughout the whole colonial period. When Latin America became independent, the national universities most naturally continued the same inherent tradition. The so-called practical professions were slow to develop. It has only been within a generation that engineering has found a place worthy of the name in these historic institutions. Agriculture and commerce came still later, and even medicine that led the way and preceded all the others was for a long time hampered by the overemphasis placed on theory.

In the secondary school, which was but the nursery of the university, very considerable emphasis was laid upon linguistic studies. The tradition of the classics lingered for a while and when it died out was replaced by the emphasis upon the acquisition of modern tongues. As a student moved on into the university proper his attention was directed almost exclusively to literary, philosophical, historical, and sociological study. In short, it was the so-called cultural education in which the abstract predominated, and even in a subject like mathematics the tendency was to lay the stress upon mathematical theory and disregard the applications that might be made in fields of engineering. These lines of study—theoretical and cultural—appeal strongly to the Latin American mind, a mind that is active, imaginative, inquisitive, discriminating, critical, eager to discuss and delighting itself in dialectics. Furthermore, these tendencies of higher education, both secondary and university, were accentuated by the fact that the clientele of the university was limited, being confined in many countries to the uppermost class of society and preparing for a selected list of professions; public service, the law, and in more recent times to a limited extent for medicine and engineering. In short the preparation was, with rare exception, for public life and not for industrial development.

At first view, it might be feared that such a long established tradition of education, and such a tendency of mental activity as I have described as prevalent throughout Latin America, would militate against the establishment and development of commercial education. I make bold to say that such is not the case. There are many points of contact between the traditional education and commercial education. The latter is too often thought of as narrow, special, and wholly practical in the narrowest acceptance of that word, but such is not the case. In the curriculum of commercial schools there is large space for the so-called cultural subjects and the curricula of the best commercial schools of Latin America are a standing proof of this fact. Such subjects as history, geography, and psychology, which at present enjoy such an important position in the curriculum of the ordinary Latin American secondary school have an equal rank in the properly organized school of commerce. If a student is preparing for anything more than the smallest local business he must be acquainted with the development, political and industrial, of the civilized nations, he must know the world's resources, their origin, and their lines of distribution. He must know the processes of the human mind, and in no vocation is this knowledge more necessary and more practical than in commerce.

Likewise the tradition of linguistic studies, so firmly established in Latin America, can have a no better field than in the commercial school. The only difference in the position of these humanistic and linguistic studies in the two types of school is the

difference in the motivation. In the one, it is entirely cultural, leading to that development of keen intellect and active interest in the unfolding of a philosophical thesis such as I witnessed in the student club. In the other, these subjects are studied for the sake of their application to the industrial, commercial, and social development of society. In no portion of the world could there be found a better prepared field for the implantation of a commercial education of this broad, thoroughly educative type than in Latin America. The basic subjects in the course of study have long since been naturalized there. They appeal to the mind of the race. The only thing to be done was to attack these subjects from a modern point of view.

II. THE ESTABLISHMENT OF COMMERCIAL EDUCATION IN LATIN AMERICA.

The introduction of commercial education into Latin America is of recent date. Although I find mention of isolated commercial schools founded more than a half century ago, there was no organized effort to develop this form of education until much later. With the opening of the present century, however, there grew up in several Latin American countries, and almost contemporaneously, the idea that this type of education should receive the active support of the state. Several reasons operated to produce this effect. First, there was a world movement in favor of organized commercial education at that time. Previously there had been certain commercial schools of renown in Europe, and in our own country there had been for a considerable time a large number of purely practical business colleges, but it was left for the present century to form a thorough philosophy of commercial education and to show how this philosophy could be put into practice, producing an education that was no less educative than other types and at the same time adapted to meet a crying need. Another cause was the growing importance of Latin America in world-wide commerce. With each advancing decade it became more obvious that the world was dependent upon the products of Latin America. As long as the world could forego what Latin America could give, she was allowed to remain to a certain extent in the isolation to which her geographical position had relegated her. But when the demands of modern industry and manufactures made the products of the continent to the south of vital importance; when the growing population of Europe and the higher standards of living demanded increased and cheaper food products, then it was that Latin America came into its own, and the routes of commerce, that had heretofore run exclusively east and west across the seas, began to run north and south as well. When the conquest of the Tropics was achieved, when certain maladies were overcome by the achievements of modern science, and when the danger of epidemics in this zone was banished, there came at once a new impulse to commercial and industrial activity in parts of Latin America that heretofore had led a purely local existence.

This international character of Latin American commerce and its rapid extension since the opening year of the present century was one of the impelling motives for the establishment and encouragement of commercial education in these countries. Commercial activity grew and with it the conviction that education should assume a form that would harmonize with the new era.

The internal development of Latin American countries was conducive also to the diffusion and extension of this form of education. Society was becoming more democratic. Henceforth not all the educational forces of the state could be directed to the refinement and culture of the uppermost class of society. A new class was slowly evolving—a commercial and industrial class. It was not looking forward to a preparation for the traditional professions, and educational leaders in more than one country foresaw the necessity of providing a type of education that would harmonize with the new social evolution.

The result of all these converging causes was that in the first years of the twentieth century there was established in a considerable number of the Latin American repub

lies, a definitely organized system of public commercial instruction. The first centers were naturally in the capital or the most important commercial town. From there they have spread into the smaller and remoter towns. At present every town of considerable size or importance in Chile has its commercial school. In Argentina they have spread from Buenos Aires to all the provincial centers. In Brazil the larger cities have one type or another of business education. In Mexico there is to be found a similar development of the commercial school, while in the other countries one or more institutions have been found.

This type of education has appealed to private initiative in a way that no other type has done in Latin America. The usual custom in Latin American educational matters has been to allow the state or the church to establish and maintain all forms of instruction from the lowest to the highest, but in the matter of commercial education, public-minded citizens have recognized its importance to the community and in more than one instance have contributed largely to the foundation and the maintenance of the school. Where some individual of great wealth was not sufficiently interested in the work to assure its success, groups of citizens in industry and chambers of commerce have taken it upon themselves to provide a place and equipment, and even teachers for the work. Men of social rank and large commercial interests have even contributed their personal service.

III. ORGANIZATION OF COMMERCIAL SCHOOLS IN LATIN AMERICA.

In organization the commercial institutions of Latin America present a wide diversity. In two or three instances the commercial school is in name or in grade of university rank. The most notable instance is the faculty of commerce in the University of Buenos Aires organized only two years ago. It occupies the same place in the educational hierarchy as do the faculties of commerce and administration in the universities of the United States.

The more common type of the commercial school, however, is the commercial high school. Even here again there is diversity in the grade. Some are full fledged high schools, requiring for admission the completion of the work in the elementary grades of the public-school system or an examination which is the equivalent. In other countries, however, the commercial school is partly an elementary and partly a high school. Its lowest class corresponds in the age of the pupil and in the character of the curriculum to the third, fourth, or fifth grade of the public elementary school, while its upper classes extend into the first and second year of high school age and curriculum. This is the type of the commercial school in the provincial towns of Chile, for example. In addition to these types there are also to be found special practical schools and commercial sections in private and church schools where it is difficult to determine whether they are merely elementary commercial schools, upper primary schools, or commercial high schools.

The position of the faculties of commerce is of course definite and stable. They are the flower and fruit of the system, but the number is still limited and necessarily must remain so. They can be established only in large centers of population and education and likewise in regions of considerable commercial activity; otherwise there would not be a sufficient number of students to warrant their maintenance. The commercial high school and the upper primary commercial schools are those upon which fall the great burden of commercial education. They are the schools to which will come the larger number of pupils and which will play the greatest part in the proper education of the commercial class.

The commercial schools of Latin America have not been a spontaneous or sporadic creation as were the so-called business colleges of the United States. On the contrary, they have been deliberately introduced and developed as a consistent part of the system of public instruction. The curriculum is philosophically arranged and in harmony with the latest and best pedagogical ideas. It affords not merely a practical

training for business; it is a real education. Its courses in history, geography, and the elements of economics and finance, in psychology and commercial law, form a course of study that parallels in educational value the cultural studies of the regular secondary schools.

The study of modern foreign languages and of the mother tongue is extensive as well as practical. I doubt if any commercial high school in the United States could compare favorably in the results of modern language instruction with the average commercial high school of Latin America. This excellence is partly on account of the more practical methods universally employed in the Latin American schools and also, no doubt, on account of the greater incentive the pupils have for the acquisition of the great commercial languages of the world. The position of the upper primary commercial school in Latin America is rather anomalous from our point of view and yet it is in line with the more recent philosophy of vocational training which has been much discussed in this country in recent years. It is a type of school more necessary for Latin America than it would be for this country. Social conditions make it almost a necessity. For the children of those families who do not belong to the wealthiest class in Latin America it is incumbent upon them to begin the preparation for their vocation at an earlier age than would ordinarily be the case here. It is true that by beginning the specialization early the student is debarred from that larger and more extensive training that he might attain if he completed the elementary school before beginning the special commercial curriculum, but, on the other hand, if he were not given the opportunity to lay the foundation for his vocation at this early age the probabilities are that he would be withdrawn from school and would lose the opportunity of commercial education entirely.

In regard to the material organization of the commercial schools in Latin America, the more common practice is to separate the commercial school entirely from the other types of upper primary or high-school education. The commercial school will have its separate buildings, its distinct corps of instructors, its specialized curriculum, and even in those subjects which might be common to both the commercial school and the ordinary high school the instruction is given separately. While this is the more common custom, it is not universal. Costa Rica, Peru, and Cuba, for example, have a commercial section in the regular city high school. One reason for the separate school is the fact that the students come usually from quite different classes of society than do those of the regular high school. The latter fosters the tradition of university education, and there are both the sentimental and organic reasons for maintaining the regular high school in connection with the old and traditional higher education. A separate installation also relieves the danger of absorption by that section which might be the stronger. In the earlier days of commercial education it might have been difficult to maintain and develop a section of commercial education as a part of the old and traditional high school, and where the two types have been maintained side by side it has been rather on account of economic reasons than for any other. The expense of maintenance is of course less, many instructors can be used in both, and in certain subjects students of both courses can be taught together.

In one respect the commercial high school enjoys an advantage over the regular type in Latin America; that is, in the recruitment of its teachers. As it is a special type of education, the motivation being in one direction, it was not only possible but feasible to employ teachers who would give a very large part of their time to the instruction in the school and in this one school, a condition which does not obtain very generally in the older type of high school.

The popularity of the commercial school in Latin America is not questioned. It has filled a place in the social organization that no other type of education could occupy. It is using for the best interest of society a stratum of the population that before its advent was not nearly so advantageous to the State and to its social development. The schools have nearly everywhere been taxed to their fullest capacity, and

this fact, together with the desire of reaching a class of students who could not attend the day session, has led to the almost universal establishment of evening sessions; in fact, many commercial schools had their beginning in evening sessions, and only after the usefulness of the school was proven to the locality was it possible to draw a sufficient number of students to open the daytime course.

Members of the congress, I have attempted in this brief way to set forth the conditions that lead to the establishment of commercial education in Latin America, its relations to the older and traditional forms of education, its adaptation to the Latin America type of mind, a statement of the establishment of the first commercial schools, their rapid diffusion, their various grades, and the method of material organization. My only desire has been to present a bird's-eye view of the subject that it might serve as an introduction to your further deliberations.

COMMERCIAL EDUCATION IN ENGLAND.

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Writing of commercial education in England less than 20 years ago, President James said: "This subject can unfortunately be disposed of in a very few pages." Considerable progress has, however, been made in the provision and organization of this branch of education since the opening of the present century. But while there has been much discussion of the subject and an increase in the facilities for study, England has not yet been able to equal in this field the work accomplished by many of the countries on the European continent and in the United States. Many reasons have conspired to produce this condition. English trade supremacy of the nineteenth century was due to perhaps three factors—her geographical position, her natural resources, and a native genius for trade. The success attained in this way tended to blind the leaders in commerce and industry to the need for educational preparation. The increasing severity of competition in the latter half of the nineteenth century proved that other nations could make up for the absence of the three factors referred to by adequate educational organization and that genius which consists in an infinite capacity for taking pains. In spite, however, of the frequent reports on the systems of commercial education in Germany, Belgium, France, and Switzerland, it was some time before the lesson was really brought home, if indeed it has been brought home, to England. And here may be mentioned several factors which have retarded the advance in technical and commercial education. The first of these is unbounded confidence in traditional methods—success had hitherto been achieved without training, therefore training is unnecessary. Secondly, the best training is in any case obtained through actual practice, therefore the shop and the office and not the school offered the most adequate preparation. Thirdly, and as a corollary of the second factor, there is a national objection to the theoretical expert, the student who has specialized in school and brings new-fangled ideas to disturb the established routine of the office. Fourthly, it was argued that the principles underlying commerce are few and simple and can easily be picked up in the intervals of practical routine. Finally, there is the pedagogical opposition to early specialization in schools; the only true preparation for life occupations is a thorough general education—broad culture, mental training on the basis of a traditional curriculum, and drill in such fundamental qualities as accuracy, thoroughness, and intellectual grasp afford a sufficiently adequate foundation for trade or professional practice. It will not be out of place in this connection to support this view by several quotations.

Mr. A. T. Pollard is thus quoted in President James's report on the Education of Business Men in Commercial High Schools of Europe (1898): "A commercial school, dealing only with commercial boys, would gradually become more and more commercial in character, a training absolutely sacrificed to immediate utility, and boys there taught would completely lose touch with the higher education given in the country." Rev. C. W. Bourne introduced a paper read before the London Chamber of Commerce, which has done so much to promote the development of commercial education, with the sentence: "To avoid any misunderstanding, I wish to state at the outset that by 'commercial education' I do not mean the teaching of 'commercial' subjects, but the imparting of a general education of such a nature as shall best fit youths for commercial pursuits." Finally, the prospectus of University College School, which for several years conducted an interesting experiment in commercial education, contains the statement: "It can not too strongly be insisted on that the requisites for success are the same alike in professional and mercantile pursuits. These requisites are accuracy of thought and of expression, the seeing eye, and the quick brain." (Public Schools Year Book, 1915, p. 299.)

The progress that has been made since the beginning of the present century has accordingly been made in the face of many obstacles. Much has been done and much remains to be done. A framework has been built up and will gradually be filled in. The provisions for commercial training have not been organized into a system, but one of the results of the present war will be a firmer alliance between trade and science.

Before entering on the actual organization of commercial education it is necessary to point out that the ordinary development of modern pedagogy has contributed largely to an improvement in the general preparation given in both elementary and secondary schools for life activities. The teaching of arithmetic has been reformed and the content has been made more practical. While there has been some little loss in accuracy because of the reduced time given to drill, this disadvantage has been offset by better training in reasoning and logical working out of actual problems and in the methods of the countinghouse.

The London Day Training College has recently conducted an experiment in the teaching of arithmetic which included a study of the markets through the medium of the daily press. The development in the teaching of geography in both the elementary and the secondary schools has followed the same general direction. In place of the sterile learning of place names and locations and the endless time devoted to map drawing, the pupils are taught something about the interdependence of natural and physical features and human life and activities. The aim is to impart a thorough knowledge of the geography of the British Isles and with those countries with which they are most intimately connected by various interests, especially those of trade and commerce. The reform in the teaching of history has not been so rapid, but here, too, the tendency is to deal more with social and industrial development rather than with political and military history. In the secondary schools in particular there must be mentioned besides the parallel improvement in the subjects mentioned—arithmetic, geography, and history—the notable reform in the teaching of modern languages. This has involved a change in the method of instruction and in the content; in the former more time is given to the spoken language, in the latter more attention is given to the manners and customs of the people whose language is being studied. No claim is made, of course, that these reforms afford an adequate substitute for commercial education, but the result is broadly to afford a better general education than hitherto was possible.

The definite provision of facilities for commercial education has followed three main directions—the training of boys and girls who can remain at school until the age of 15 or 16, courses in evening continuation schools for young men and women engaged in commercial occupations during the day, and special courses of university

grade leading up to diplomas and degrees. It will be noticed that no mention is made of commercial education in secondary schools. Although a majority of pupils in secondary schools are destined to take up commercial pursuits, the opposition to specialization continues, and the aim of these schools is still broadly cultural, with an emphasis on the classics. Pupils who are intended for commercial careers usually enter the "modern" sides, but it is only the exceptional school that has an organized commercial course. The modern side of a secondary school provides a general education with specialization in modern languages—usually German and French, together with mathematics, history, geography, English, and drawing. A large number of the schools announce "preparation for commercial life," but this as a rule merely means that those who desire may receive instruction in bookkeeping and shorthand.

It is significant that the Public Schools Year Book, an annual giving a list of the leading secondary schools in England, together with much miscellaneous information, including advice on careers for boys, makes no mention of trade or commerce in a list of 25 occupations. Nor does one of the standard works on English secondary education (Norwood and Hope, *Higher Education of Boys in England*, London, 1909) devote any space to the subject. The chief need of the secondary schools at present is greater elasticity and a recognition that if pupils do not find what they most require in the schools, they will leave and proceed to institutions that will meet their demands. It is significant that the average duration of secondary school life after the age of 12 is 2 years and 9 months for boys and 2 years and 11 months for girls, and that the average age of boys on leaving is 15 years and 7 months and of girls 16 years. These facts, taken in conjunction with the growing number and popularity "of business and commercial colleges," largely private venture schools of little educational value, form a severe indictment of present conditions.

The development of commercial education has accordingly not been in the traditional institutions of the country. The three main types of educational facilities have been referred to; all of these are practically creations of the present century. For the education of boys and girls who can remain at school until the age of 15 but yet can not proceed to secondary school there have been established in London and elsewhere what are coming to be known as central schools. These schools, established most successfully in London in 1911, represent a new tendency in the provision of education for boys and girls between the ages of 11 and 15 and coming from elementary schools. The purpose of these schools is to provide the boy or girl with "the best possible equipment for entering upon the industrial or commercial world as soon as he leaves school while at the same time qualifying him to enter upon a special course of training for some particular industry at a polytechnic or similar institution if he desires to continue his education further." The central schools in London are fed by pupils from some 20 elementary schools of the neighborhood. They are organized with a commercial or an industrial bias or both, depending somewhat on the local conditions. The schools offer a richer curriculum than the elementary schools and the methods of instruction are better. The commercial courses are so framed that scholars are able at the close of four years to accept junior appointments in business houses without further training. Besides the ordinary school subjects of scripture, English, history, geography, mathematics, singing, and physical exercises, the minimum requirements as laid down in the *Elementary Schools Handbook* of the London County Council are as follows:

I. At least four hours a week must be given to a modern language during the whole of the four years' course.

II. Not less than two hours a week must be given to laboratory work in experimental science during the first and second years of the course, and, if thought desirable, this instruction may be continued during the third and fourth years.

III. At least two hours a week must be given to drawing, including scale drawing throughout the whole of the course.

IV. In the case of boys, one session a week must be given to handicraft during the first and second years.

V. In the case of girls, one session a week must be given to domestic economy during the first three years of the course, but its continuance in the fourth year is optional.

VI. Not less than one and a half hours a week must be given to shorthand as an optional subject in the third and fourth years.

VII. Not less than one hour a week must be given to the principles of bookkeeping during the third and fourth years as an optional subject.

VIII. Where there is sufficient demand an optional out-of-school class in typewriting must be held for one hour a day * * * to be attended only by third and fourth year pupils.

Mention has already been made of the improved methods of teaching modern languages, mathematics, geography, and history. Since these schools are not vocational, an introductory course only is attempted in the technical subjects—i. e., bookkeeping, business routine, and shorthand and typewriting. It is felt that more than this might not only lead to the danger of exploiting the young employees but in the case of boys might narrow their opportunities of learning other branches of commerce than mere office routine. Hence, in shorthand and typewriting only the elements are taught, and in bookkeeping, since the methods are likely to vary in different offices, the pupils are given only a knowledge of the chief books and their use, of simple accounting, and of the more general business terms. Liverpool is attempting to provide a similar course in the ordinary elementary schools with the addition of an extra year. This branch of education is, however, still in an experimental stage. The educational ideas underlying it seem on the whole to be sound, and its ultimate success will depend not on the school so much as on the encouragement given by employers to the graduates from such courses.

Reference has already been made to the characteristic English opposition to theoretical training in itself. The same objection does not seem to hold when theory is closely related to practice. Hence the comparative success of the second type of commercial education as given in evening continuation schools. Much thought and care have been devoted to making these courses attractive and suitable to the needs of students who during the day are engaged in commercial pursuits. Efforts have also been made to secure the cooperation of employers, many of whom in different ways encourage their younger employees to attend the evening courses by interesting themselves in their progress, by paying their fees, and in a few cases allowing time off for attendance. There has been considerable discussion of the whole question of making attendance compulsory at continuation schools, but it is generally felt that all the resources of the voluntary method must be tried out before resort is had to compulsion. It is to be remembered, of course, that commercial education is only one of several courses furnished by the evening continuation schools. During recent years much thought has been devoted to securing continuity of attendance and to providing suitably articulated courses over a period of years. In general, the needs of younger employees are considered first, but the larger and wealthier school systems are providing courses to meet more specialized demands. The majority of the pupils in attendance are between the ages of 14 and 18. For the purposes of the annual Government grant in respect of evening schools, the board of education requires the organization of coordinated courses. As a rule, the commercial courses are arranged to cover a period of five years. The schools are in session from September to April, and students are expected to attend for two hours each evening three times a week. Preparatory courses are offered for boys

and girls who desire to improve their general education or who are not sufficiently prepared to take advantage of the higher courses. The commercial courses in Manchester are organized as follows:

Grade I. Evening continuation schools: First and second year commercial course for boys and girls engaged in commercial or distributive occupations.

Grade II. Branch commercial courses: Second, third, and fourth year commercial courses to meet the requirements of juniors in business houses.

Grade III. Central institution: Municipal school of commerce and languages giving advanced instruction in commercial subjects and in languages.

This organization is typical and is found throughout the country. The following table (from Board of Education, Educational Pamphlets, No. 19, the Course System in Evening Schools, 1910) illustrates the organization of subject matter in a four-year commercial course.

FIRST YEAR.		SECOND YEAR.	
Commercial arithmetic.....	2 hours	Commercial arithmetic.....	2 hours
English.....	2 hours	English and commercial corre-	
Geography.....	1 hour	spondence.....	2 hours
Shorthand or bookkeeping.....	1 hour	Shorthand or bookkeeping.....	2 hours
Total.....	6 hours	Total.....	6 hours
THIRD AND FOURTH YEARS.			
For correspondence and ship-		For bookkeepers:	
pers' clerks:		Commercial arithmetic.....	
A modern language.....		3 hours	
Correspondence and office		Bookkeeping.....	
routine.....		2 hours	
1 hour		Correspondence and office	
Commercial geography.....		routine.....	
1 hour		English.....	
Bookkeeping or shorthand ..		1 hour	
Total.....		Total.....	
6 hours		6 hours	

The only variation in these courses is that a modern language may be introduced in the first or second year. It will be noticed that the general principle underlying the above organization is to make the work of the first two years introductory, and to begin specialization to suit the needs of different branches of commerce in the third year. Thus Manchester provides courses to meet the requirements of shorthand clerks and typists, junior and invoice clerks, bookkeepers, correspondence and shippers' clerks, and in Liverpool the scheme makes provision for general clerks, correspondence and shorthand clerks, shipping and forwarding clerks, and bookkeepers, invoice clerks, and cashiers. The advanced courses generally provide a vast range of subjects for the specialist; thus there are found courses in languages, economics, accountancy, commercial work and administration, commercial law, history of commerce and industry, banking, principles of local government, secretarial and municipal work. The range of interests in languages may be illustrated by the instruction provided in Manchester in French, German, Spanish, Portuguese, Italian, Russian, Danish, Dutch, Modern Greek, Arabic, Japanese, Hindustani, and Swedish.

The organization of commercial evening continuation schools is based on the recommendation of the board of education. The standards of work are formulated, however, by a number of examining bodies which grant certificates and diplomas generally recognized in the commercial world. The best known and most influential of these bodies is the London Chamber of Commerce, whose influence in encouraging the development of commercial education has been profound. The commercial

education committee of this body has drawn up suggestive schemes of work and time-tables. In addition to providing courses itself the committee grants junior and senior certificates on the basis of the following examinations:

I. Junior commercial education certificate: Suited to pupils in higher elementary and secondary day schools during the last year or two years of their school life, or to young persons employed during the daytime attending evening classes in commercial subjects.

SUBJECTS OF EXAMINATION.

1. *Obligatory subjects*.—(a) English essay, dictation, and analysis. (b) Hand-writing. (c) Arithmetic, including a knowledge of the metric system, tots, and mental arithmetic. (d) A modern foreign language, comprising translation, dictation, composition, and conversation (selected from group B). (e) Commercial geography. (f) Commercial history.

2. *Optional subjects*.—Two subjects must be taken from any of four groups: A. Mercantile; B. Linguistic; C. Mathematical; D. Scientific.

II. Senior commercial education certificate: For youths over 15 years of age who can devote all their time up to the ages of 18 or 19 to study, and for others who can only attend at technical colleges or evening classes.

SUBJECTS OF EXAMINATION.

1. *Obligatory subjects*.—English; foreign (including oriental) languages and Esperanto, any two, preferably including one other than French or German; mathematics; commercial history and geography; elements of political economy.

2. *Optional subjects*.—At least two of the following: Mathematics, including the compulsory portion treated more fully, and, in addition, trigonometry; methods and machinery of business, including insurance (fire, life, and marine), and exchange (the stock exchange and foreign exchange); banking and currency; commercial and industrial law; bookkeeping; chemistry; photography; drawing, groups 1, 2, 3, 4, 5, or 6; shorthand or stenography (English, French, or German), typewriting and hand-writing.

The Royal Society of Arts also conducts examinations and grants certificates of elementary, intermediate, and advanced grades for proficiency in the following subjects: Bookkeeping, shorthand, typewriting, theory and practice of commerce, banking, commercial law, company law, economic history, economic theory, economic geography, arithmetic, precis writing, handwriting and correspondence, commercial correspondence and business training, English, French, German, Spanish, Italian, Portuguese, Danish, Russian, Dutch, Norwegian, Swedish, Chinese, Japanese, Hindustani, and Arabic. The most popular examining body in the North of England is the Union of Lancashire and Cheshire Institutes, whose examinations and certificates are similar to those of the Royal Society of Arts. The chief service of these examining bodies is that they help to standardize the work of many different types of institutions, since students may be prepared either in the public evening continuation schools or in educational classes maintained and conducted by Y. M. C. A.'s, mechanics', and other institutes, and workmen's associations.

The provision for employees who will occupy junior and intermediate positions in commercial pursuits is on the whole fairly satisfactory. Here again success will depend on whole-hearted support from employers and a far more thoroughgoing change in attitude toward theoretical training. The training of leaders in commerce is also a recent development that has taken place with the creation of local universities since the beginning of the present century. Situated as all of these are in industrial and commercial centers and free from the restrictive traditions of the older universities, the newer universities have proved to be more responsive to local needs. The following universities and university colleges have instituted faculties of commerce or

commercial courses leading to the degrees or diplomas: Birmingham, Durham, Leeds, Liverpool, Manchester, Nottingham, Reading, Southampton, and institutions in London like the Birkbeck Institute and the London School of Economics. The courses require three years of study for the bachelor's degree and an additional year for the master's, while diplomas are granted after two years' work. The courses are conducted in close connection with the faculties of economics, and in the University of London, where there is no separate faculty of commerce, the examinations and degrees are offered in the faculty of economics. In all cases advisory committees representing local chambers of commerce, education committees, bankers' and accountants' associations assist the university faculties. The courses include political economy, geography, modern history, modern languages, the organization of industry and commerce, accounting, banking and exchange, methods of statistics, commercial law, and in some cases a science applicable to manufactures.

All the subjects are treated with special reference to commercial needs. The statement of purpose of the faculty of commerce in the University of Birmingham may be applied to all. This is "to furnish a systematic training, extending over a period of three years, for students who look forward to business careers. In planning the course of instruction two objects have been kept in view: (1) The combination of liberal culture with ability; and (2) a due regard for different requirements of different branches of commercial life." The course at this university is organized as follows:

First year: Commerce I; accounting; elementary economics; the commerce seminar; a modern language; a science applicable to manufacture, or a second modern language. Second year: Commerce II; accounting; economics of transport; the other subjects as above. Third year: Commerce III; accounting; technique of trade, including banking and exchange; public finance; methods of statistics; commercial law; the other subjects as above.

It may perhaps prove of interest to give in detail the content of the courses in commerce:

First year: The industrial and commercial organizations and resources of the British Empire.

Second year: The industrial and commercial organization and resources of the United States, Germany, Russia, France, South America, etc.

Both courses include modern development, structure and position of industry and trade to-day; geographical position and natural resources; economic history; supply and organization of capital and labor; the state of the mechanic arts; commercial history and geography introduced in close relation to each other and underlying economic causes.

Third year: Location and laying out of offices and works; capitalization; production on large and small scale; differentiation and consolidation of manufactures; combinations of manufacturers or merchants; limited companies, private and public; their advantages and disadvantages; factories and manufacturing; machinery—its financial and industrial consequences; works management; relations of employers and employed; methods of remuneration; hours of labor; choice of markets; market fluctuations and their interpretations; advertisement; negotiation; relation of selling price to cost; fixed charge; methods of sale and purchase; credit; good will; and trade cycles.

Technique of trade: Organization of the great staple industries, markets and institutions at home and abroad; chief technical terms; and the most important mercantile documents; banking systems, exchange and money market. The seminar aims to train students in independent investigation and reasoning.

The content of the courses at the other universities is to all intents and purposes similar to the above. At present it is impossible to say with what success these courses are meeting. Recent events have aroused interest in this phase of education, and several committees, inspired and encouraged by the board of trade, are considering the possibilities of furnishing a scientific and technical foundation for trade and

commerce. Here, too, it appears necessary to emphasize again the fact that that progress in commercial as well as technical education in England will only be assured when employers place greater confidence in the training afforded by educational institutions. Empirical methods have been adequate up to the present, but the leaders of the future in all grades must be men of vision and training, and these can only be produced if suitable rewards are offered for their sacrifice of time and energy in several years of preparation. The broad general education that has been regarded hitherto as adequate preparation for technical and commercial pursuits must of course be retained; but further expansion along the lines of specialization discussed in this paper will be necessary in the near future. But notoriously conservative and devoted to tradition as England may be, and however slow she is in adopting new ideas, once her progress begins it is safe to say that it will be sure and maintained. Hence, while her contribution to the field of commercial education has been slight, the period of experiment has begun, and the future will probably see a solution characteristic of the English genius when applied to practical affairs.

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COMMERCIAL EDUCATION IN GERMANY.

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For well nigh a century Americans have been looking to Germany for educational standards, but this interest has largely been centered upon the old-line school activities, for there Germany had the most to contribute. A problem like the one before us at this time, commercial education in Germany, has only comparatively recently come into the foreground. I may as well make clear at the outset that events in Germany since July, 1914, do not concern us here. What I shall have to say presupposes the world's life proceeding as uninterruptedly as in June, 1914.

In 1850 Germany was an agricultural group which attracted little attention among the business nations of the world. By 1910, its foreign trade was second only to that of Great Britain, and it did not seem presumptuous then to figure out the time when England would no longer be the foremost commercial nation of the world. This tends to suggest that a great change had come over Germany, the greater part of which had taken place since 1884. During the 25 years from 1882 to 1907, the agricultural population of Germany fell off from about 19 millions to 17½ millions of laborers; the industrial population grew in numbers from 16 to 26 millions; and the commer-

cial population increased from 4½ millions to over 8 millions. In other words, during this period the number of persons engaged in agriculture actually decreased 8 per cent, while in industry there was a gain of 64 per cent, and in commerce a gain of 82 per cent.

Bearing these facts in mind, it is not difficult to understand how from 1880 to 1910 German foreign trade increased from \$31 per capita to \$62 per capita, while English foreign trade was increasing from \$100 to \$125 per capita, and that of the United States grew from \$32 to \$37 per capita. In other words, German per capita foreign trade had exactly doubled in the interval from 1880 to 1910; English per capita foreign trade had increased one-quarter; and American per capita foreign trade had increased only one-sixth.

From these data, it is evident that Germany had learned to do two things. In the first place she had learned to manufacture commodities, and in the second place she had learned to market those commodities. It is the second of those acquirements which interests us at the present moment.

One must recognize at the outset that German conditions are not American conditions, that the centralized, paternal government of the Empire offers possibilities which are forever beyond the reach of a decentralized democratic government like our own, and like all those sister governments represented in this convocation of Pan American Republics, with their community of civic and political ideals. Furthermore, Germany represents an old civilization, with all the stability and stratification of social classes which that implies, whereas we with our newer civilizations, our vast undeveloped resources, our more mobile social conditions, have never felt the fearful economic pressure which forces nations as well as individuals to find a way out. "Necessity is the mother of invention" has a national as well as an individual application. Nevertheless what Germany has done is well worth our attention and study, for "of all species of extravagant waste there is none more unpardonable than that which permits one nation to remain in ignorance of the clever and successful methods devised in another for gaining important ends."

Paradoxical though it may appear, we western nations have been handicapped by a plethora of natural resources, and we have all been prodigal of those resources. Nature has been so lavish with her gifts that the necessity of conserving them has but lately been bearing in upon us. Germany, on the other hand, while not phenomenally rich in natural resources, aside perhaps from coal and iron, has developed her talents in every conceivable manner, and many a liability by skilful management has been converted into an asset. Money has been spent ungrudgingly wherever improved trade conditions would result sufficient to justify that expenditure. Individual or corporate rights have never been allowed to stand in the way of the public good. A single illustration must suffice, out of all which might be chosen, to support this assertion.

It is a commonplace that water transportation is cheaper than land transportation. Germany's attitude shows practical appreciation of this truth, for of the 8,600 miles of navigable waterways within the empire, at least 2,200 of them are found in canals or canalized streams. Little or nothing was done in this field so long as the railroads were in private hands, but once the nationalization of the railroads was complete the development of water transportation proceeded rapidly. Thus railroad opposition, which has so frequently proved an insurmountable obstacle to waterway improvement in this country, was cleverly eliminated. Despite the marvelous increase in water transportation in Germany, the railroads are making money and annually return to the Government a substantial income which goes to reduce the amount to be raised by taxation for Government expenses. Since the railways have been in Government hands they are estimated to have returned over \$750,000,000 of net revenue to the public treasury.

With control of railroad and waterway transportation in Government hands, adjustments can always be made to meet foreign competition—adjustments which even go so far as the granting of special rates for carriage of raw material in and of manufactured products out over the nationally owned railroads and waterways. “‘Trading made easy’ is the motto of the German Government, and it is being lived up to wherever possible.”

With Government support of this character, together with an admirable system of parcel post, post office, express, and freight service, the German merchant is magnificently fortified for marketing his goods both abroad and at home. Furthermore, the German seems to possess an infinite capacity for taking pains. No task is too difficult, no trouble too great, provided he sees increased business ahead. “What the customer wants” is his watchword. He employs every means to discover what this may be, and then he proceeds to satisfy this want, no matter how ridiculous the desire may seem from the German point of view. One might contrast, in passing, the attitude of the Englishman, who always seems to act upon the conviction that what is good enough for England is good enough for Timbuctoo, for example, despite the fact that climatic, social, and other conditions in Timbuctoo may be radically different from those in England. These characteristic German and English attitudes go far toward explaining why Germany has been competing so successfully with England for the trade of the world. One of the most potent forces in bringing about this result has been the German school system.

In Germany specialization is the order of the day. Every effort is made to find out early what a lad can do best, and he is then trained thoroughly for that particular work and for no other. A boy is more than likely to follow the business of his father. This results in a vocational stratification, so to speak, which is partly conditioned by and partly the complement of the social stratification which characterizes German life. Unquestionably this immensely simplifies the problem of the German school and enables the youngster to hunt his vocational game, as it were, with a rifle instead of pursuing it with a kind of shotgun educational equipment, as do we in America, with the hope that one of the 30 small shot may bring down the quarry if the other 29 miss altogether.

Time forbids any extended analysis of the German school system, but one should note, in passing, that there are practically two distinct systems—one including a three-year elementary course, a nine-year secondary course, and a three-year university course; the other composed of an eight-year elementary course, followed in most of the important States of the Empire by a compulsory continuation school course. This latter combination (elementary and continuation school course) furnishes the recruitment of the rank and file of the great armies of agriculture, commerce, and industry, while the former combination (elementary, secondary, and university) trains the officers of these armies and the members of the directing classes in every walk of life. The one provides the schooling for the masses, enrolling some 95 per cent of the educable population of the country; the other provides the schooling for the classes. Commercial schools, which form the topic for our consideration at the present, are found in both these systems, for commercial training is not the exclusive possession of either of the great social and economic classes, as is true of classical training, of legal training, of training for a specific trade, and the like. In a way, then, commercial training comes nearer cross-sectioning vertically the various social strata in Germany than does any other single aspect of school work.

Commercial education in Germany appears in three phases or levels—lower commercial schools, secondary commercial schools, and higher commercial schools. No one of these reaches down into the real lower or elementary school system, for the Germans do not believe in such early specialization. There is a basic amount of fundamental instruction which must be acquired before any specialization is begun. On this

account the greater part of the elementary school course is given over to the fundamental subjects, with very little attention devoted to the application of the processes learned therein. There is a feeling among the educational authorities that the present course of intellectual work in the lower schools represents an irreducible minimum, and the intrusion of work of a vocational nature would displace, but not replace, some of the essential subjects. Commercial education, then, begins at the close of the regular elementary school course, when the pupil is 14 years of age, and at this period is found almost exclusively in the regular continuation schools.

In a word, a continuation school is a part-time school, requiring in the main six hours of work per week, distributed over two or three different days, which the individual pupil attends from his fourteenth to his seventeenth year.

In 12 of the 26 States of the Empire attendance at a continuation school is compulsory for boys, although only 4 of the States impose the same obligation upon girls. In fact, not only are the employers forced to allow their workers to attend school, but they are responsible for seeing that the boys are actually present. An employer who prevents an employee from attending school is subject to a fine of 20 marks or three days in jail for each offense. There is thus small likelihood of press of business in shop or office interfering with a boy's schooling. One city with 500 pupils in its continuation schools had only four cases of dereliction in an entire school year, so that the violations are practically negligible. Not only must the employer contribute the time of the employee while in attendance at the continuation school, but he must pay the tuition as well, a varying sum, amounting in general to 20 or 30 marks per year. In 1909, of the 460 German cities with 10,000 or more inhabitants, 291 had continuation schools, in 220 of which attendance was compulsory.

What is the significance of the continuation school in commercial life? Simply this: A boy of 14 on leaving the regular elementary school finds a job in some line of commercial work and becomes an apprentice for three years. It may be in some minor phase of banking, in a transportation company, with an insurance broker, or in the book trade. It may be that he starts work with a grocer or in some other business dealing with food products and supplies. Again, he may begin with a dry goods or clothing house. Perhaps he goes with an employer who handles glass, porcelain, metal goods, building material, fuel, or other wares from the inorganic world. These, then—banking, transportation, insurance, and book trade, in the first place; food products, in the second place; clothing, in the third; and products of the inorganic world, in the fourth—represent the four large groups of allied fields in the commercial world and follow the classification in vogue in the Munich schools.

In the fall of that year the aforesaid youngster must present himself at the continuation-school door. All practical details of the business he learns with his employer, but the State forces him to go to school in order to gain certain general notions of business and its conduct which would be quite beyond the ability of the business house to impart, chiefly on account of lack of time. In other words, the State proposes to make this young man a better business man, and proceeds to train him in the fundamental principles and practices of his chosen line of work.

Whatever the commercial group in question, the list of school subjects of instruction is always the same. In Munich, these include religion (the presence of which is due to peculiar conditions existing in Bavaria), arithmetic, theory of exchange, book-keeping and accounting, commercial correspondence, commercial geography, commodities of commerce, commercial regulations, training for citizenship, and penmanship, with three elective subjects—stenography, typewriting, and a foreign language. Yet the content of these various subjects differs according to the four groups noted a little while back. Assuming a knowledge of fundamental subjects and operations acquired in the elementary school, the continuation-school class for banking, transportation, and the book trade deals with the applications of arithmetic peculiar to these allied interests. So the subject matter of arithmetic for the dry

goods or clothing-house apprentices covers quite a different set of applications. Likewise with the arithmetic for those in businesses dealing with foodstuffs or products of the inorganic world. All this school instruction dovetails closely with what the youngster is doing in his practical work with his employer.

It is not worth our while to describe in detail how this general idea is carried out for the other subjects and the other groups. Commodities of commerce (*Warenkunde*, as the Germans say) does merit a further word of explanation in passing. Commodities of commerce is a very general term dealing with what may be called the "raw materials" of the business. In the foodstuffs, clothing trades, and businesses which handle the products of the inorganic world, the term "raw materials" is sufficiently clear. Here the commodities handled are carefully studied, as well as their habitat, cultivation, transportation, preparation for the market; their purity or genuineness; their adulteration or imitation; their packing, preserving, and use. Utilization of the collections in the school museum and visits to local manufactories figure largely in this study. In the banking, transportation, and insurance group the application is not quite so patent. But even here the topics are still confined to what might be called the "raw materials" of the business: creation and organization of banks and business enterprises, the stock exchange, fairs (for the medieval fair still survives in the important towns of Germany, and has still to be reckoned with both from the financing and the distributing point of view), and various other phases of the insurance and transportation problems.

One other subject warrants a word of comment, for we in this country are but now beginning to appreciate its significance. Yet it is a field which the distinguished head of the Munich school system, Dr. Kerschensteiner, has almost made his life work. I refer to training for citizenship. Germany has had a large emigration problem, which is now practically solved, but Germany can hardly be called an immigration country. If Germany feels it necessary to train Germans for citizenship, how much more significant must the same problem be in a country like ours, with nearly 3,000,000 persons to whom the English language is an alien tongue? In Germany, training for citizenship endeavors to acquaint the pupils with the Government of the country, the responsibilities, rights, and privileges devolving upon its inhabitants, and aims to establish in their minds certain large principles of conduct, illustrated by numerous specific practical examples, which shall render the individual a sound, sane, and helpful member of the community, the State, and the nation. A mere glance at the topics treated will show how extremely practical and valuable is the mass of information contained therein, and how essential it is in a country like Germany, where almost every movement the individual makes from the beginning of his life unto the end thereof is either sanctioned or forbidden by some official regulation. The inexorableness of the natural law finds adequate supplementing in the equal inexorableness of the German statute law. Woe be it unto the individual who is ignorant thereof!

At the end of his three years of apprenticeship the German youth has learned from his employer the practical features of his chosen field of commercial activity, but he has also gained an understanding of the elementary theoretical principles underlying his work through the medium of the continuation school. Furthermore he has some appreciation of what it means to be a German citizen. Thus has the State intervened in what we are pleased to call the private life of its people and even of those destined always to be counted among its directed classes, for Germany has long since appreciated the impossibility of divorcing private affairs from those of public concern and she is, furthermore, convinced of the inadequacy of any training which is completed by the boy's or girl's fourteenth year.

From one point of view the middle or secondary commercial schools are the oldest of all types of German commercial groups, for one can trace their beginnings to a period more than two centuries back. With few exceptions, however, they are

mere appendages of the existing secondary schools and are always looked upon more or less askance. Aside from the schools at Leipzig and Frankfort this mild disdain is probably not altogether unmerited. These two schools just cited are admirable examples of what a secondary commercial school should be, but they are probably no whit better than what one would find in this country in the High School of Commerce in New York or in the corresponding schools in other American cities.

Banking attracts a goodly number of the pupils of these schools, for many of the banks go so far as to demand from their employees possession of the one-year volunteer service certificate in the army, a privilege which attaches exclusively to those who have attended a secondary school for at least six years. Secondary commercial schools lack the practical aspects which stand out so prominently in connection with the continuation schools. They are decidedly more general in their nature for the pupils enrolled therein have not yet selected the particular line of commercial work which they intend to follow. Aside from commercial arithmetic, bookkeeping, commercial correspondence, and commercial science, with stenography as an elective, the subjects of study in these commercial schools do not differ materially from those of the regular secondary course.

As far as mere office practice is concerned, the lads who complete this secondary course are unquestionably less adept than those from the continuation schools, for they have had considerably less drill in commercial subjects, but their general attainment is markedly superior—thanks to a broader course of study, with a presumably sterner stock of brain stuff to work upon—and they are consequently in line for positions of responsibility and underleadership in the business world instead of being mere hewers of wood and drawers of water.

An advanced type of secondary commercial schools is found in some half dozen German cities, with a more distinctively commercial course. In its commercial subjects this more nearly parallels the continuation school, save that these subjects are considered from a broader, more general point of view, as might perhaps be assumed when one recalls the more comprehensive and catholic character of the pupils' previous academic attainments, as well as their greater maturity. In this category will fall subjects like the following: Commercial arithmetic, general commercial theory, commercial correspondence, bookkeeping, commercial and banking law, commercial history, and geography of commerce and trade. The course is designed to fit young men for the more important positions in commercial life, for banking, export and import trade, and service abroad.

Schools of this type represent the modern commercial movement in the middle grade of the German educational organization. The older school subjects did not respond with sufficient promptness to the changing needs of modern life. The former system of apprenticeship likewise failed to meet the demands imposed upon it. This new movement then attempts to combine theory with practice and to that extent conforms to our best modern thought; on the one hand not the old scholastic theory bristling with mediaevalism, but a theory dealing in the problems of the modern trade relations; on the other hand not a stultifying period of indenture when the apprentice often had a modicum of time to devote to learning his master's vocation during the intervals of acting as household drudge and even "nursemaid." The old system is gone forever, and a new one that replaces diffusion of interest by concentration of effort has taken its place.

At the head of the line of commercial educational institutions in Germany stand the Handelshochschulen, or colleges of commerce. Although these are not officially classed as universities, yet the standard of admission is practically the same as for the older philosophical foundations, and the grade of both teachers and work is on essentially the same high level. The establishment of these institutions represents

only one phase of the great struggle between humanism and realism that has been so bitterly waged, especially in the continental nations, for decades, almost for centuries. With us in America the strife has not been so acrimonious, for here in the New World the power of tradition does not seem so invulnerable as in the older, more stratified civilizations. Not that humanistic culture is absolutely any less real or any less valuable to-day than formerly, but the time has now admittedly come when it no longer enjoys a monopoly of culture. It must share its place of honor with the more dynamic if perhaps the more mundane culture of realism. The establishment of the commercial college is the result, rather than even a contributory cause, of Germany's commercial progress, for Leipzig, the oldest of them, dates only from 1898. But the colleges bid fair in the immediate future to enhance that progress even more.

The fourfold purpose of the Cologne College of Commerce which may be taken perhaps as the best type of all the colleges of commerce is thus officially expressed: (1) To offer a thorough general and commercial education to young people who propose to devote themselves to a commercial calling; (2) to give prospective commercial-school teachers an opportunity for further theoretical and practical special training; (3) to furnish young administrative and consular officials, secretaries of chambers of commerce, and the like, an opportunity for acquiring special mercantile information; and (4) to make it possible for practical merchants and those engaged in allied callings to render themselves more proficient in certain branches of commercial lore.

As is probably well known, training for the civil service is considerably more important and far-reaching in Germany than in the United States. The German civil servant occupies a very important and honorable position. The mayoralty, for instance, is a calling where professional training is required and is not a political plum to be gathered by the party leader or his nominee. It is as much a business as being president of a bank, and the successful man in a small city is likely to be called to preside over a larger city. The Cologne College of Commerce, in its course in administration (*Verwaltungskurse*) offers training for mayors and other municipal administrative officers, secretaries of chambers of commerce, and the like. No specific subjects are prescribed nor is any special diploma given. The regular participants are university students who have already specialized in jurisprudence and political economy. Young employees in the customs, postal, or telegraph services, who have completed at least seven years of a nine-year secondary course, are admitted to this work as special students.

The resources of the school in the way of modern-language instruction are particularly noteworthy, for courses are offered in 17 foreign modern tongues, to wit, English, French, Italian, Spanish, Portuguese, Russian, Dutch, Norwegian, Danish, Japanese, Chinese, Arabic, modern Persian, modern Greek, Hindustani, Turkish, and Esperanto. In other words, it is possible for the prospective merchant or business representative to find here an introduction at least to the language of any people with whom he is normally likely to have any commercial relations. The school thus attempts to supply any legitimate linguistic demand that may arise in order, as the director says, "to preserve, through his knowledge of foreign tongues, the superiority of the German merchant in the keen international world struggle."

Probably the most noteworthy characteristic of these German commercial schools is the extent to which private and semipublic activity figures in their foundation and support. From the continuation school at the bottom to the college of commerce at the top non-Government initiative is in evidence all along the line. It is not at all unusual to find financial support of a single school derived from fees, city and national grants, endowment income, and appropriations from commercial organizations of various kinds. Combination and cooperation of interests seem to be the watchwords in Germany. Another evidence of this same tendency is to be found in the readiness

of the imperial authorities to stand behind commercial and industrial enterprises, not only with the moral support of the Government, but also with the national resources so far as they are available.

In this German system of commercial education we find perhaps not a perfect system, but one which succeeds admirably in the work it sets out to do. The continuation school, the secondary commercial school, and the college of commerce each has its own peculiar function, and each plays its part well. Thanks to Government interference, if you choose to apply so harsh a term, each dovetails into every other, and all minister to the needs of the commercial world. Cooperation is the magic word to conjure by in German life, whether military, political, social, or economic, and appreciation of this is perhaps the most important lesson we can learn from a consideration of German commercial education—cooperation where each works for the other, and all work together for the common good.

The CHAIRMAN. The question is now open for general discussion.

Mr. CLINTON SMITH. I am a delegate from Brazil, and therefore must look at this matter from a standpoint exactly the opposite of that of the reader of the last paper (Dr. Farrington). I have lived in Brazil for a number of years, and have had opportunity to study conditions there. One of the things that impressed me was the thorough preparation of commercial agents.

I had occasion once to visit a common school in Germany. I found there many boys from 12 to 14 years of age who had already decided that they were going to be cotton and woolen merchants in Montevideo.

Now, in that school, having in mind such distant, but no less practical—from the German point of view—aims, these pupils studied no German; they studied no grammar; they studied no arithmetic; but they studied business—the business they were going to follow in the future. All the rest was incidental. Of course they did study geography. That was a part of the business they were going to follow. And just let me give you an instance of how they studied geography. They did not study it as we study it in American schools. As a matter of fact, they do not study it altogether out of books, but from other, and I may say, more practical sources. Now, remember these boys were not over 14 years old. One of them came up to me and asked, "You are an American?" On my answering that I was, he asked further, "Did you ever live in New York?" I told him I had been in New York, and also in other places in the United States. Then he asked me if I had ever been in Ohio, and I told him yes. After that he put the question "How much does it cost to transport cotton piece goods from Dayton, Ohio, to New York, to seaboard?" Well, he had me there. I asked him why he wanted to know. He said he was preparing to go to New York to enter the export business. Now, mind you, he was only 14 years old. Fancy an English boy asking such questions as that.

This boy was preparing to come to the United States. Another one I met was preparing to go to Australia; another to Japan; another to India.

Another lad I met there spoke very good English. On talking with him, I learned that he was born in the United States of German parentage. He had barely started to school in this country before his parents returned to the old country. He had come from Texas to Missouri and from Missouri to Ohio. He said, "Texas is a great State." I asked him if he had studied geography and he said he had not. He said something about the cheap rates on the Erie Canal and asked me if I had ever ridden over the Erie Railroad. He said that from Buffalo the Erie had a shorter line to New York than the Pennsylvania, but that he had gone over the Pennsylvania to New York. Now that boy, as I said, had never studied geography and was 14 years of age; yet he had never forgotten those things.

That illustrates the difference between the German method of education and the American, for example.

In South America I have met up with graduates of schools of both countries. The German-taught commercial agent is much better informed on practical matters, small details, than the American.

Now the German system of education looks entirely to preparing men for business. On the other hand, the first demand of Americans is that the boys shall be trained in the schools for citizenship.

We ought never to adopt the German system here. Never. What I criticize in the German system is that it fits boys for business, but not for citizenship. In this country we want to do more for our boys than merely make them good business men; we want to make them good citizens. That is one of the differences between German ideals and American ideals.

A word about American goods for South America: I can not too strongly emphasize the necessity of honesty in dealing with the Latin Americans. If we want the business, we must deliver what is ordered and in the way in which it is desired. You do not take enough trouble with orders from Latin America, or, for the matter of that, I suppose, with orders from any foreign country.

The American exporter seems to think that anything is good enough for the foreigner. Above all, he seems to think that he alone knows what he ought to have. This is the great trouble. It is the blot, too, on American export dealings. When a Latin American orders goods sent in sacks he does not want them to come boxed; yet if the American exporter sees fit to box them instead of sacking them he never stops to consider the wishes of the customer.

I recall an instance in which a large order was placed for goods with a New York firm. They requested the goods to be packed

so that on arrival at their seaboard destination they could be transferred without repacking to the backs of mules for transportation up into the mountains. What did the New Yorker do? He sent them down in big boxes. Imagine sending big bulky boxes up into the mountains two or three days' climb on the back of mules.

Well, ladies and gentlemen, the New York firm didn't get a duplicate order. The next order went to Germany. Why? Because the Germans would pack the goods exactly as the Latin American wanted them.

That is what the American exporter must do if he wants the business. We want American goods, but we want them to meet our requirements not alone as to the quality of the goods themselves but as to their packing. They must come to us according to specification. The Germans pack their goods so that only 6 per cent are damaged, as against 35 per cent of the American-packed goods. By this carelessness in packing the Americans have lost the window-glass business. Why? Because there is so large a percentage of breakage that the trade can not tolerate it.

If the American exporter will meet the requirements of Brazil, the business is there waiting for him. He has but to go after it. Brazil wants the goods. Be honest and you will get the trade.

The CHAIRMAN. I would like to ask Mr. Smith whether McKenzie College has a commercial department.

Mr. SMITH. It devotes its attention principally to an engineering course but has a business course, largely bookkeeping. We have a school that gives an excellent scientific course—not especially a commercial college. I refer to the Escola Comerciale, a very good commercial college.

The CHAIRMAN. When I was in South America I visited the Presidents of several countries. I asked them if they had any message I could take back to the business men of North America as to what they could do for Latin America. One or two said they needed men, but most of them said they needed money. In talking with the President of Brazil some two or three months ago—Mr. Muller was present at the interview—his message was this: What the business men of North America can do for Brazil, more than supplying money or men or anything else, is to establish a university in Brazil which would compare with Harvard, Yale, Princeton, or Cornell, or similar representative universities of this country. His last words were: "Mr. Babson, when you get back to North America and see some rich man that wants to do something big, let him start a Harvard or a Yale down here in Brazil." If there is any such rich man in the audience, I am happy to pass the idea along.

A VOICE. That statement was made in the presence of the President of the Republic, you say?

The CHAIRMAN. Yes, that statement was made by Dr. Muller.

Mr. FARRINGTON. We must recognize that there are students and students at German institutions. I do not want to be understood as holding any brief for Germany. I am trying to present the facts as I see them, as they existed up to July, 1914. I have been in Germany four or five times. I have spent months there in the German schools, and I have seen every type of German school and German pupil.

The Germans do not train their boys as Americans train theirs. Rather, they train them for specific lines of work. The German has specific knowledge. He has no general knowledge. Take him out of his special field, and he is lost.

But that is not the point. You have got to compete with the German business man in the line of business, and not in any other line. You have got to meet him in his field—not out of it—and the German is better prepared for the line of work he has to do than is any other man I know of in the world. That is the man we have got to compete with. We may not like it. The point is, however, that we have got to face it.

One other word with reference to cooperation. One has only to go to Germany to learn what the German means by "cooperation." German cooperation, I grant, is largely forced down from above, but the cooperation is there, and it accomplishes things. You have only to see the various activities, the various agencies, combined in all sorts of work—municipal work, State work, manual work, intellectual work—to feel the spirit of cooperation. The chamber of commerce gets behind and boosts. It boosts the commercial schools. The chamber of commerce, semigovernmental, is there, and it helps. It supports and helps to develop industries.

I do not agree with all the things I find in Germany. I would not for the world have the German system of education and political life imposed upon this country—no, not for one moment. But these are the things with which we have got to come in contact.

Now, if we can put that system into operation under our own organization, that will accomplish the same result without the disagreeable features of it. This is what I have to suggest, and I hope we may be able to accomplish the necessary results and yet avoid the objectionable ones.

The CHAIRMAN. In connection with what Dr. Farrington has said, I should like to speak of a man I know of in Hamburg who sells very largely in South America. He has four sons. The eldest son is being trained for business in Russia. That son is about 14 years

old. He has a Russian teacher. His room is furnished with furs. On the walls of his room will be seen the heads of reindeer. Everything about the room is Russian.

The next son is 11. That boy is being trained for business in Japan. He has a Japanese teacher. His room is furnished with Japanese trophies. You would think you were going into a Japanese museum to drop into that boy's room.

The next boy is about nine and a half. Were you to go into his room you would see it furnished like a Turkish den. He has a Turkish tutor. That boy is being trained for developing trade in the East.

The next boy is only seven and a half years old. He is being trained to do business in this country, and he had for tutor one of my best friends, a chap from Chicago.

This story indicates the German character, so different from what we should expect to find in a Pittsburgh millionaire, who supplies his sons with automobiles to ride around in, and who would never think of making the sacrifice necessary to prepare his son—his four sons—for work in the four quarters of the globe.

Mr. SMITH. Of course, we must train our boys; but when it comes to sacrificing the boys for business, then I will let business go hang.

The CHAIRMAN. Are you sacrificing the boy, or is your selfishness keeping him at home?

Mr. SMITH. When I train my boy for one thing, for love, for humanity, for manhood, then that suffices. But to train him the German way—"Le jeu ne vaut pas la chandelle." We must have specially trained men, but the emphasis is upon the man, and not upon the training. That is all I insist on, that we train our boys to be men. And I am glad to know that in America we have not gone to the extreme of sacrificing principle to make a man a good business agent, no matter what kind of a man he is. "Le jeu ne vaut pas la chandelle."

The CHAIRMAN. Is he sacrificing his boys, or is he performing a sacrifice himself? That is my point. I do not see that these boys are being sacrificed in being trained for business in Russia, in Turkey, in Japan, and in the United States. To my mind they are being much better trained for manhood than are the boys of the Pittsburgh millionaire who ride around in automobiles and spend an inordinate amount of money on no special purpose.

Mr. SMITH. Is there something back of that training which your German friend is giving to his four sons? Is love for money beyond it?

The CHAIRMAN. Oh, no; money is no object to him.

Mr. SMITH. What is his real motive, then?

The CHAIRMAN. I think it is patriotism.

Mr. HOKE. I should like to know where there is any cooperation in the case of this boy of 7 years. Is there a spirit of reciprocity there? What part has the boy in the plan? Isn't it expecting a great deal that a boy of his age shall take an active interest in or shall cooperate in his career, which is, of necessity, in view of his tender years so far off? It strikes me that it is a case of German regulation from above. There is no escape from it on the boy's part. Cooperation is a thing that we do out of the righteousness of our mind and heart. Now, this boy isn't cooperating—certainly not in that sense. He is merely following orders, and he has little conception of what it all means. It is exactly the opposite of cooperation. He is being operated upon.

Mr. WERTHEIM. Unless you get the right kind of men to represent business you are going to fail. That is where the emphasis is to be laid. At the West Side Y. M. C. A. in New York we started a course in exporting. It is not a mere course. I will read you some of the headings and show you just how the problem has been attacked from the point of view of the men actually engaged in the work who wanted to get some information to help them in their work, but who could not afford to spend all their time in college. We are trying to attack that problem in the right way. This is an outline on exporting. We had about 90 men studying this course, and we tried to pick out the essential things and present them in the most effective manner. [Reading:] First steps in exporting; packing for export—I will tell you how that is. The American people fail to realize the importance of packing for export. One man who was a large paper manufacturer had gotten an order from some place down in South America. He had shown the order to the man who was in the printing business. He did not believe the customer wanted that kind of paper, and he said so, and explained that they did not use that kind of paper down there. The man in charge of the shipping said: "I don't care; I'm going to send it." That is the way we have of doing business. It turned out that the customer didn't want that kind of paper. The result was the manufacturer never got any further orders. If he had taken the trouble to cable down and find out definitely whether the customer wanted it, wanted that kind of paper, he would have found that he did not, and so he would have gotten more business instead of that being the last order from that particular customer.

[Reading further:] Forwarding problems; exporting opportunities in the Far East; great currents in the world's foreign trade; personal relations; traveling salesmen—I will read some of the subheadings under this.

[Reading further:] The scarcity of properly qualified men for the foreign service; what is required in the manufacturing end; holding the right man; relations with the lesson papers—suggestions.

These are all in printed form.

[Reading further:] American policy in foreign trade; export opportunities in South and Central America; how our export business in South America has been developed; dependence of exporting upon banking and shipping facilities; foreign banking operations; shipping and shipbuilding.

Now, it seems to me that in training we have got to get down to the level of the men who are in the classes, not to talk over their heads. We should begin with the fundamentals and work up rather than give them something they do not know anything about. At the Y. M. C. A. we are giving the young men what they wanted, and they can tell what they want. Why? Because they are paying for it, and they are going to get what they pay for. In one of our departments this last year, where such men attended, we took in \$92,000. If the men thought we were not giving them what they wanted, they would not have paid in all that money. They weren't the class of men who had money to throw away. For this reason, we must have practical instructors, men who know the work. This we are trying to do, and the results indicate that we are having some degree of success.

The CHAIRMAN. If no one else has anything to say, we will take an adjournment until to-morrow morning at 9.30.

Adjournment.

JOINT SESSION OF SUBSECTIONS 1, 2, 8, AND 9 OF SECTION IV.

GEORGE WASHINGTON UNIVERSITY,
Thursday morning, December 30, 1915.

Honorary Chairman, His Excellency CARLOS MARIA DE PENA.
Chairman, ELMER E. BROWN.

The session was called to order at 10 o'clock by the chairman.

Papers presented:

Historical development of secondary education in the United States, by Elmer E. Brown.

Essentials of an ideal compulsory attendance law, by Ben Blewett in collaboration with John B. Quinn.

Should public vocational training of high school grade be organized as a course or courses in the regular high school, or in a separate school established primarily for vocational training? by Edwin G. Cooley.

The need of industrial education in an industrial democracy, by John Dewey.

A natural system of agricultural education, by H. J. Waters.

A decade in agricultural education, by A. M. Soule.

The CHAIRMAN. I have invited his excellency, Sr. Carlos Maria de Pena, the Uruguayan minister to this country, to act as the presiding officer of this meeting. He has excused himself from the active performance of the duties of presiding officer, but has consented on my urgent request to act as the honorary presiding officer of our section. It is doubtless well known to those that are here that Minister de Pena has been one of the foremost educators and promoters of an advanced type of education in Uruguay, a country which is probably more closely connected educationally with the United States than any other South American country. This connection is one of long standing and goes back to the middle of the nineteenth century.

In recognition of his great service to education, New York University had the honor of adopting Minister de Pena as one of our honorary alumni, two or three years ago, so I have a personal interest, an institutional interest perhaps, in being able to stand with him here to-day, and act as his subordinate and second in conducting the affairs of this meeting, but I can not let him be honorary to the extent of saying nothing at all. I am going to begin the session this morning by calling upon Minister de Pena.

Sr. DE PENA. I regret very much not knowing the English language, and can speak but a few words. I thank first my chancellor, Dr. Elmer E. Brown. I said my chancellor, because I am an alumnus, a graduate of the University of New York.

As he has said, I have been instrumental in the reform of the schools of Uruguay, and as he has said also, Uruguay has a very intimate relationship with the United States in educational matters.

Our primary schools were organized by Mr. Varela, who visited the United States in 1868, inspecting the schools of Massachusetts, Philadelphia, Boston, and the main cities of your country in the interest of education. I have been ever since my arrival in this country devoting some time to extending this work. I have made the acquaintance of all your most eminent professors and presidents and chancellors of universities. I am an admirer of this country, and of your progress in educational matters, which I follow with interest. I thank Chancellor Brown for the honor that he has given me now, in calling on me to preside at this meeting. I am obliged for the compliment, but Mr. Brown will direct the exercises.

The CHAIRMAN. There are a number of Latin Americans here to whom I can not speak in their own language. I wish I could, for I think it is the most beautiful language I have ever heard, except my own. I must be patriotic. May I ask you, Mr. Minister, to express to the Latin Americans something of the pleasure we have in meeting with them this morning.

Sr. de Pena delivered a short address in Spanish, which was not reported.

The CHAIRMAN. It has been suggested that I should open the exercises this morning with the presentation of a paper, introductory, as it were, to the discussion of the problems of secondary and industrial education. It has been further suggested that that paper should take the form of some historical account of the development of secondary education in this country. I shall accordingly ask your attention for a few moments to a hasty sketch of the development of American secondary schools.

THE HISTORICAL DEVELOPMENT OF SECONDARY EDUCATION IN THE UNITED STATES.

By ELMER ELLSWORTH BROWN,
Chancellor, New York University.

Every human institution is the center of a lively play of social forces. It has some influence of its own. Very likely it is engaged in a vigorous effort to mold and remake its social environment. Nevertheless, it is more influenced than influencing. The world is, all of the time, pressing upon it and changing its form and character.

This interplay becomes conspicuous and absorbing when it takes the form of open strife between some two or more of the great, capital institutions: Church against State, industrial society against governmental regulation, the army against the legislature, universities against ecclesiastical or royal authority.

Again, within a comprehensive and world-wide institution, we find the lesser divisions playing one upon another, and shifting continually in their relative strength and influence. The history of the Roman church is rich in examples of this process.

It is with some such background of social theory as is barely hinted in these few words that we may profitably approach the history of educational institutions. These institutions are participants in that historic game which makes the comedy of all human life; participants in the stern and never-ending struggle through which society is continually reshaping itself toward some far-distant consummation.

Take now, this history of schools in the United States: A school is more than a school. It is a type, a symptom, a stage of human progress. The successive forms which our secondary education has assumed are coefficients of the development of our national life and character. Back of each of them there is a folk-psychology and a story of human conflict and self-sacrifice.

Briefly stated, this historical survey of our secondary education deals, first, with the Latin-grammar schools of the colonial period; secondly, with the "academies" that thrived particularly between the Revolution and the Civil War; thirdly, with the public high schools of a later time; and fourthly, for the end is not yet, with the question whether the high school, too, is a passing form—whether forces are not already at work which threaten its supremacy in our secondary education.

Whatever the answer to that final question may be, we may be sure that the high school, like its predecessors, will not merely fight for its position as a school against other types of school but will go up or down or be changed within by the mightier social forces which are making our modern life.

Our seventeenth century schools were Latin-grammar schools as a matter of course. The American colonists, some of them, were conscious of building a new world. But they could not get away from ingrained habits of thought. The grammar schools came over the water with them, as part of their mental make-up. So the Boston Latin School came into being, and after some preliminary failures the endowed "free schools" of Virginia. New England soon had a fair number of such schools, important additions to the group being made on the Hopkins foundations. Pennsylvania and Maryland made early provision for schools of a similar character, and the other colonies followed. The schools of this type were erected into ambitious colonial systems of education in Massachusetts, Connecticut, New Hampshire, and Maryland, while, parallel with the schools, there gradually appeared a group of colonial colleges, to which the schools were tributary.

The Latin tradition, as Mr. Eggleston remarked in speaking of the seventeenth century, "had still some centuries of tough life in it." The later doctrine that Latin should be studied because of the magic of mental discipline that was in it, was hardly known in our colonial days. Latin in the seventeenth century was still a world language for science and diplomacy and was widely used in practical life. In the eighteenth century French was supplanting it at various points, but it was even then a language of use, though still more largely a language of ornament. Without it no man could make other men believe he was educated; while for a few choice spirits, who had the real "smack of Latin" within them, the impetus of the great Renaissance still persisted. To these few, boys and men, the language was still the gateway to a larger life.

The eighteenth century made large demands for practical studies, and it is interesting to see with what difficulty such studies edged their way into the schools. Arithmetic, bookkeeping, French, and surveying, were sometimes taught by special

teachers outside of the sacred inclosure. Sometimes the Latin school boys were excused from the real school for an hour or two each day to pursue these sordid studies under another master in the neighborhood. A prophet might have foretold that these symptoms of change would be accentuated by any great political upheaval, such as the American Revolution. Even before the Revolutionary war Benjamin Franklin dared erect an academy in Philadelphia, with a more liberal scheme of studies. The war was not yet over when members of the Phillips family, in Massachusetts and New Hampshire, endowed the great academies that bear the Phillips name. It was not long before academies were springing up in all of the New England, Middle, and Southern States, and in the new territories beyond the Alleghanies.

The name academy had some shadowy connection with ancient Greece as interpreted by the Renaissance, and probably a more direct connection with those non-conformist schools which had had a precarious existence in England under the same designation. It became a highly popular title in this country, where its use to designate a learned society has only within the past generation gained the ascendancy over its use to designate a secondary school.

These school *academies* played a very considerable part in the development of American education. They were hospitable to studies other than those of the classical tradition, while still giving to Latin the place of honor. They were commonly managed by small groups of disinterested citizens, and many forceful and inspiring teachers were found in them. They were not infrequently boarding schools and drew their students from a wide countryside.

Many a man still in the vigor of life, looks back with an almost romantic affection to his academy days. With the exception of the college, no other type of school in the United States, I am confident, has had clustering about it so much of that pure and vivid human sentiment.

The academies could not come into their influential position without a corresponding decline on the part of the grammar schools. But the schools of the older type did not succumb without protest and struggle. It is in the controversial literature on this subject that we see reflected the change in social ideals that brought about the change in the schools. There had been an advance in general prosperity, which had widened the circle of those seeking more than an elementary education. The ministerial profession, which had been a strong support of the concentrated classical instruction of both colleges and grammar schools, had now declined somewhat in relative influence. Many of those now destined for secondary instruction, desired, on both intellectual and practical grounds, a wider training in English grammar, composition, and public speaking, in mathematics, geography, history, and "natural philosophy." These studies accordingly assumed an important place in the academies, and the schools which offered these studies assumed an important place in the community.

But the new type of school could not simply supplant the old. Some of the Latin schools died in the struggle, some of them went over altogether to the new movement and assumed the academy name. A few of the strongest of them held their ground, making only gradual concessions to the new demands, and some of these are alive to-day. The Boston Latin School and the William Penn Charter School in Philadelphia are conspicuous examples.

Now, very much as the schools of the older type were thrust into the background by the academies in the years just following the Revolution, the academies in turn found themselves thrust into the background in the years immediately following our Civil War. The new type that came into prominence in that period was the public high school.

The earliest high schools go back to the twenties and thirties of the nineteenth century. But the type did not even threaten to become dominant till several decades

later. Its rise into a really commanding position has largely paralleled the advance of our urban population and the growth in influence and well-being of our middle class industrial and commercial population.

The contest for supremacy between the academies and the earlier high schools was often direct and intense, and the literature of that struggle throws a strong illumination upon the social movements to which it was related. That struggle was intimately connected with changes going on in our higher education, such as the rise of State universities and the new democracy of studies.

The parts had now been shifted curiously. The academy had become—whether in fact or in public opinion—the conservative and aristocratic school. Its fortunes were linked with those of the college, for which many of its students were preparing. The high school now represented freedom, democracy, the broader outlook, the hope of new things.

In large measure the early popularity of the high schools grew out of their close connection with public systems of elementary education and the fact that they generally offered free tuition. For a time it seemed as if a working adjustment might be reached under which the teaching of classical subjects and the preparation of students for college would fall to the academies and other privately managed schools, while the more popular and immediately useful subjects would be taught by the high schools. But no such division could hold for any length of time. A triumphant democracy went on to provide for the poor in the free schools as broad and as high an education as the rich could buy in schools of another type.

The growth of the high schools has indeed been astounding, far outstripping the rate of growth in our population. At any given time considerably more than one out of every hundred of our people is in actual attendance upon schools of this type; and the time apparently is not far distant when one out of every ten of our people, the country over, will have had some measure of secondary education.

In the meantime, the high schools have come into significant relations with our colleges and universities, and even the more conservative of our institutions of higher education are now drawing the larger proportion of their students from schools of this type. It is not to be forgotten that our higher education has greatly broadened its scope in recent years, so that this connection does not represent such a narrowing of the secondary school curriculum as it might have involved at an earlier day.

It does not seem possible for an American secondary school to thrive for any length of time without becoming a stepping stone to a higher institution. Whatever else we may do in an educational way in this country, we are forever building that educational ladder of which Huxley wrote, with its foot in the gutter, and its top in the university. Just now it is the high school which chiefly represents, all over this land, the second rung of that ladder.

But it is not to be forgotten that all through this educational history there have been variant institutions. The main type has always been accompanied by subsidiary types. We never can tell when one of these subsidiary types will press forward, assume new prominence, dispute the leadership, and even take the chief place for its own. Already this has happened twice, in ways that I have briefly reviewed. The private secondary school is now a highly significant subsidiary type—or perhaps we should say a group of subsidiary types. An important place in this group must be assigned to schools having distinct religious affiliations and permeated with a religious spirit. It is an indispensable service which such schools render. It is not to be expected, however, that the schools of this group will advance to the foremost place so far as the numbers of their students are concerned. The vocational school, on the other hand, may eventually rival the high school, unless the high school itself shall be found capable of absorbing the vocational elements. Here is one of the chief problems of our secondary education to-day, and one that promises developments of extraordinary interest in the immediate future.

There are weighty reasons why the newer movements in vocational education must have consideration. They come directly home to some of the primal concerns of human life. The serious purpose of students in vocational schools is most impressive. It is the seriousness that goes with keenly motivated instruction.

The sordid character attributed to such schools and courses is for the most part imaginary. One of the very things that vocational teaching can accomplish is to make the ordinary occupations of men less sordid. What, after all, is a man's trade or profession? It is a form of social service. It is, in any ordinary case, the channel of a man's chief service to his community.

Furthermore, as industry becomes more complex, it touches other life in varied ways. It has in it more of ideas, more of intellectual interest. I venture to say this, even though in all large industries at the border line between handwork and machine work there are many painfully mechanical occupations. In general, occupations are becoming alive with thought and alive with social purpose. An education which prepares for such occupations has in it values which are not to be ignored.

Especially should such education appeal to your true humanist in the schools, for the humanity that is in it is elemental, it is vivid with life, it is open-eyed with liberal anticipations.

We must look forward to a state of society in which every man shall have a fair chance to discover for himself the best service he can render to society and shall have a fair chance to prepare himself for such service. Something like this must enter largely into our educational ideal for the future. I am persuaded that a large responsibility for the attainment of this condition will inevitably fall upon our secondary schools and that that type of school will have the best likelihood of living and thriving, the best likelihood of leading all others, which shall carry us farthest toward this happy consummation.

The CHAIRMAN. The next paper is on "The essentials of an ideal compulsory education law." This paper was written by Mr. John B. Quinn, Chief Attendance Officer, St. Louis, Mo., in collaboration with Supt. Ben Blewett, of the St. Louis public schools. The paper will be read by Dr. Blewett.

THE ESSENTIALS OF AN IDEAL COMPULSORY EDUCATION LAW.¹

By JOHN B. QUINN,

Chief Attendance Officer, St. Louis, Mo.

Social movements swing in cycles. Newer complex problems present themselves to each successive generation that stimulate a period of agitation aiming at reforms. Often in the initial stages these reforms have a nullifying tendency through a conflict of laws, until society relieves the ineffective trend of such legislation and sets about to readjust conditions constructively toward some ideal standard. The history of child-welfare legislation during the last two decades is a significant illustration.

The very large number of European immigrants locating in large cities who have a tendency to organize distinct centers of races or nationalities, aloof from the native population, bring with them standards of living which require modification so that these people may assimilate from their neighbors and contribute in turn to them that which is best in each, and become a homogeneous part of our cosmopolitan com-

¹ Written in collaboration with and read by the late Dr. Ben Blewett, Superintendent of Schools, St. Louis, Mo.

munities. The agency of the schools particularly, and especially the public schools, is the instrumentality through which the Nation succeeds in accomplishing this essential aim.

In some of the countries from which the immigrants have come, the standards of education and their social influence is very high. There is comparatively little illiteracy among the peoples that came from the west and northwest of Europe during the past two decades; but among the immigrants from the eastern, southern, and southeastern parts of Europe the percentage of illiteracy of those over 10 years of age has been above 20 per cent, as they have no compulsory education laws, or have not had the opportunities of schooling. Prior to 1890, less than one-third of the States had compulsory education laws, enforcement of which was confined chiefly to the large cities. Such laws have been extended throughout the country, including Porto Rico and Hawaii, and are enforced in all of the States except Georgia and Mississippi.

The introduction of labor-saving machinery of a highly effective type, during that period, caused a large demand for children, both boys and girls, who were withdrawn from the schools by their parents and placed in the industries. Before 1890 child labor laws had been established in a few States only, but the conditions affecting the health, morals, and education of children were found sometimes so inhumane that a voluntary national organization secured the passage of laws among the different States to remedy these evils, and to-day some form of child labor law is on the statutes in every State. The effective operation of these child labor laws in the large cities has been in a great measure due to the activities of the schools through the cooperation of the attendance officers in the States in which the compulsory education laws are adequate.

The progress of legislation since 1890 to keep children in school regularly, and to keep unauthorized school children out of employment, has in the main been directed along separate and independent lines of attack. On the one hand, school authorities as one agency drafted and secured the passage of compulsory education legislation without the consideration of certain features that had been incorporated in child labor laws, and which were so primarily a function of the schools, to wit, to release children from school, to issue employment certificates, and the right to demand and inspect certificates issued to school children in employment. The child labor committees, on the other hand, have drafted laws covering all phases of the child at work, and only within the last five years have they begun to recognize educational standards and the advisability of school authorities to release children from school, and make the attendance officers jointly responsible for the supervision of the matter of certification and following up of children in employment after they have been released from school.

The conflict of laws that arose from the lack of correlation and cooperation between the agencies interested in securing the passage of workable and highly effective laws for child welfare and for school attendance still exists in a number of the States. In Kansas the maximal compulsory age of the child is his fifteenth birthday, at which time the child may leave school for work and remain idle, as he is not permitted to work in many kinds of employment until he attains the age of 16. This conflict breeds mischief and idleness and increases the number of dangerous elements in a community. North Dakota, Rhode Island, and Oregon have similar conflicts in their laws.

The variance of the laws among the States is very wide. In 20 of the States proof of the age of the child is demanded before a child is released from school, together with an affidavit of the parent; in 15 States a certificate is issued upon the presentation of a school attendance record with the signature of the principal either of the public or private school the child attended, without any other proof of age being demanded. School authorities are very familiar with the abuses resulting from this system, and the deceit which is practiced by the parent in this regard with the knowledge of the child reacts upon the child's future life to his moral detriment.

The tendency of the child welfare legislation at the present day has been to vest the authority of the issuance of employment certificates in school boards, or superintendents of city, town, or county schools. Upwards of 30 States have such provisions. More singular provisions are made in other States, which are worthy of note: In two States the parent makes an affidavit before a notary public, which affidavit is filed with the employer. In two other States boards of health or the sheriffs of the county or city issue the employment certificates. In four of the States one of the judges or justices of the peace is authorized to issue the employment certificate releasing a child from school.

There is a variance also in the enforcement of the child-labor provisions. Twelve of the States, among which is Missouri, authorize both attendance officers and factory inspectors to visit and inspect certificates on file by employers. In five other States the attendance officer or county superintendent performs this function. In another State this duty devolves upon the probation officer. In 15 other States the State factory inspector alone has the right to enforce the provisions of the law, and in one the prosecuting attorney. Thirty-five States prohibit the employment of children under 14 years. Special restrictions are imposed on children under 16 years of age as to the kind of work they are permitted to do in 21 of the States. In 14 States restrictions are extended from 17 to 21 years of age. In 24 of the States the employment of children under 16 years of age is forbidden at night; under 14 years of age in four of the States. Nine of the States limit employment of children under 16 years of age to eight hours a day, seven of the States to nine hours a day, nine of the States to 10 hours a day, and the other States have no limit. The educational requirements for children under 16 years of age to work also vary. Missouri requires the ability to read and write easy English sentences. Fourteen States have a similar law. Eight States require the equivalent of a third grade standard, two of the fourth grade, seven of the fifth grade; Arkansas, Kentucky, New York, and Oregon of the sixth grade. Ohio makes a distinction of sixth grade for males and seventh grade for females. Minnesota, Nebraska, New Hampshire, Vermont, and Washington require completion of the eighth grade. California and Colorado require attendance at the evening schools for children whose education is limited. In two States certificates for children under 18 years of age must be on file. Massachusetts requires minors under 18 years of age who had not attained the fifth grade to attend evening school until 21 years of age.

There is a marked variance in the laws of the States in the limiting ages of compulsory attendance. The legislatures of 60 per cent of the States have placed the minimal age at 8 years; the others at 7 years. The maximal age in 40 per cent of the States is the fourteenth birthday; in 40 per cent the sixteenth birthday; and in 15 per cent the fifteenth birthday. The others have no special provision. Maryland, Massachusetts, Ohio, Oklahoma (and Missouri in cities of 500,000 or over) require children to attend between these ages during the entire school year. Missouri (outside of St. Louis), Nebraska, New Hampshire, and Oregon have three-fourths time. Ten other States require an annual attendance of from 12 weeks to 130 days during the year.

Part-time or continuation-school classes have been adopted in Massachusetts, New Jersey, New York, Ohio, Rhode Island, and Wisconsin, at which attendance is obligatory for at least four hours a week on the same day, either afternoon or morning, for children who have not attained the age of 17, unless they attend high school. Massachusetts has been a leader in the movement for vocational training. In 1906 a commission appointed by Gov. Douglas made an exhaustive study of the industries, with recommendations that resulted in the passage of a law in 1911 establishing specific types of vocational schools, as day vocational schools, part-time vocational schools, and evening vocational schools. The commission in its report in 1906 believed that 80 per cent of the children who contemplated leaving school for work would take advantage of these opportunities and remain at school. Although all-day vocational schools have been established in only 11 of the 354 cities and have reached

only 10 per cent of the children they aimed to help, the experience of these schools has demonstrated their value. The report of Commissioner Snedden, May, 1914, on the work in these schools may justify the conclusion that the expenditure of money for this work in cities would be unwise unless obligatory attendance was enforced among youths at work or at home until they had reached the age of 18. The experience in Wisconsin demonstrates the utility and possibility of enforcing compulsory attendance at such vocational continuation classes for children under 17 years of age. Evening vocational classes have been better attended than all-day classes, but they do not secure the proportion of youths under 21 years of age they are designed to help most.

Communities are demanding higher educational standards for the children who leave school for work, a greater diversity of studies in the curriculum, and vocational training adapted to the needs of children to bridge the gap between school and work, restrictions of the number of hours children under 18 years of age may be permitted to work, and that children remain at school until 16 years of age unless at work, and that no child be permitted to work under 14 years of age except in agricultural pursuits and domestic employment. The enforcement of these provisions must devolve upon the schools, as the public-school system is the representative of the State.

The experience of all of the States has demonstrated the wisdom and the importance from a social and an economic standpoint of efficient compulsory-education laws. Our public-school system had its foundation in Massachusetts in 1642 with such legislation as a basis, 75 years earlier than the German system was established. The consideration of the essentials of an ideal compulsory-education law must take into account the varying conditions of its operation in rural communities, towns, and large cities, and the provisions must be reasonable and capable of efficient enforcement. Decisions of supreme courts have uniformly held:

"As to minors the State stands in the position of *parentes patriae* and may exercise unlimited supervision and control over their contracts, occupation, and conduct, and the liberty and right of those who assume to deal with them. This is a power which inheres in the Government for its own preservation and for the protection of the life, person, health, and morals of its future citizens. 'It is not and can not be disputed that the interest which the State has in the physical, moral, and intellectual well-being of its members warrants the implication and the exercise of their just power which will result in preparing the child in future life to support itself, to serve the State, and in all the relations and duties of adult life to perform well and capably its part.'

"The supervision and the control of minors is a subject which has always been regarded as within the province of legislative authority. How far it shall be exercised is a question of expediency and propriety which it is the sole province of the legislatures to determine. The judiciary has no authority to interfere with the legislature's judgment on that subject. 'Minors are the wards of the Nation, and even the control of them by parents is subject to the unlimited supervisory control of the State.' 'The constitutionality of legislation for the protection of children or minors is rarely questioned, and the legislature is conceded a wide discretion in creating restraints.'

"Even the courts which take a very liberal view of individual liberty, and are inclined to condemn paternal legislation, would concede that such paternal control may be exercised over children so especially in the choice of occupations, hours of labor, payment of wages, and everything pertaining to education, and in these matters a wide and constantly expanding legislative activity is exercised." (*Oregon v. Shorey*, 86 Pac. Rep., 881.)

Constructive legislation in the training of children for adult life and developing their moral and physical capacities to the fullest extent must conform to the traditions of our American democracy. The optimism of the child must be sustained, his ambitions stimulated, and his ideals and aspirations placed on a high plane. It

should aim at that standard which Mr. Barclay of the Mosely Educational Commission, noted in his report as characteristic of public-school education in America, to wit: "The acquisition of knowledge is becoming of less and less importance as compared with the development of character, health, and adaptability, and with the making of the handy man and handy woman who can turn themselves to anything." Underlying this comment comes the reflection that this achievement of the work of the schools breaks down class and racial hatreds with the earnest effort of centralizing the lives and the powers of the individuals toward a proper sense of responsibilities in their life work and with a self-sacrificing devotion to the service of our country.

It becomes imperative that a system of compulsory attendance at vocational or continuation schools be established to meet the needs of the adolescent child as well as a system of elementary schools to prepare children for the opportunities such schools would afford. The need is manifest when it is considered that only 6 per cent of the children entering the first grade remain to the high school and 55 per cent of the children leave school before reaching the sixth grade and few of the children have opportunity or apprenticeships in industrial life. The schools should not only develop but the system should offer opportunities for children of marked ability to be advanced and by a system of scholarships encouraged to attain their highest possible ambitions. Free text-books, clothing, and necessary appliances to cure or remedy spinal curvature, impaired eyesight or hearing, should be provided children of indigent families through some auxiliary public board of relief to give such children an equal chance with those better endowed and to remove avoidable occasions for exemptions from school attendance. Free transportation to schools in sparsely settled districts is essential for the effective enforcement of compulsory laws. A census bureau connected with the attendance department of the schools to register all children between 4 and 18 years of age, so that they could be followed up in the schools and at work, is essential. This registry would enable the attendance officer to enforce the compulsory attendance law through the elementary school period and after the children have left school for work to enforce effectively the provisions relative to continued attendance at vocational and continuation schools. A system of following up children who have left school for work until they have attained the age of 18 years, with a view to determine the reasons for their success or failure in employment, as well as a study of the occupations, wages, and opportunities afforded them, should be incorporated as a part of the work of the attendance officers. Employers and parents should be required to give the necessary information.

An employment registry for assisting school children to find work adapted to their especial talents, as well as to enable employers to obtain desirable help from the school children would eliminate a great amount of idleness and dissipation of energy. It would save the employers time by relieving them of the annoyance of interviewing, "hiring, and firing" incompetent workers. This work could also be administered by the attendance officers.

All minors under 18 years of age engaged in street vending should be required to have permits from the school boards to carry on such work independent of the local tax license they must pay. These permits should be subject to revocation on violation of any of the school regulations. This would control the attendance of children at school during school hours and lessen idleness.

Persons in charge of schools should be required under some penalty to report absences and to give information regarding absences of children at school to attendance officers. Employers, agents, or parents violating any of the provisions of the law or abetting its contravention should be liable to penalty.

The system of issuance of employment certificates to children working in offices, stores, factories, workshops, places of amusement, or any kind of service should be under the control of school boards. The certificates should be issued by the attendance officer or other appointee of the school board under the most exacting require-

ments as to documentary proof of age, affidavit of parent to the officer designated to issue the employment certificate, satisfactory evidence of regular attendance at school, satisfactory evidence that the child has a definite place of employment, and a certificate of health from the board of health, family physician, or the medical inspector of the schools. This employment certificate should not be given the child, but should be mailed by the attendance officer to the employer who should return it promptly to the attendance officer after the child has quit the service. This would give the attendance officer a definite line on unemployed children and would perfect the "follow-up" system suggested. Such children should be compelled to return to all-day or part-time vocational classes, or to the regular graded schools until another opportunity for work presents itself. This would reduce idleness. Children over 16 might receive a different form of certificate, whilst a third form would be given to the children engaged in street trades and domestic service. Attendance officers should have the express right to enter without warrant any factory, workshop, mercantile establishment, or any place in which children are employed or engaged to inspect certificates of children in employment or service as an effective means of enforcing the provisions of the law.

Provision should be made that superintendents of schools, attendance officers, or other persons authorized to issue employment certificates, be empowered to take the affidavits of parents regarding the ages of children upon satisfactory evidence. Penalties should be provided in the compulsory education law for making false affidavit. Proof of the ages of children should be required upon first entrance of children to schools. This would compel the vital statistics department of boards of health to search their records and enforce the penalties on physicians and midwives that have failed to record births.

Any person, whether employer or parent, that employs a child or has a child in his service during school hours, unless the child has been properly excused from school attendance by the attendance officers should be expressly designated as a violator of the law.

In cities and counties having juvenile-court laws, concurrent jurisdiction should be given the juvenile court to deal with the parents or employers or others that violate the compulsory attendance laws, child-labor laws and other laws relating to the welfare of children. The juvenile-court laws should authorize attendance officers to file petitions in the juvenile court in cases of neglected children and delinquent school offenders who defy parental and civil authority by violating the provisions of the compulsory education law, and empower them to act as probation officers. This would enable the school board in any school district, through the attendance officer, to deal with neglected or delinquent children most promptly, that the welfare of the child may be conserved. The school boards should have power to erect and maintain industrial, parental, or truant schools to which refractory children may be assigned for their care, correction, and education. The enforcement of all compulsory education laws should be vested in the school boards through the attendance officers. There should be nothing in the law to prevent women from acting as attendance officers. The powers of the attendance officers should be extremely broad and explicitly set forth, to cover the various duties that may devolve upon them. The police should be required to cooperate with the attendance officers in the enforcement of the law.

In rural districts the compulsory school age might begin at 8 years. In cities of 10,000 or over, at 7 years. Children should attend school until 16 years of age during the full term for which the schools are in session, and until they have reached their sixteenth birthday, provided, however, that they may be excused at 14 years for work if they have completed the sixth grade, and are able to read and write English sentences readily. All children under 18 years of age not attending any school (including those at work or at home), unless physically or mentally disabled should be required to attend continuation school classes or other vocational classes

until they have attained their eighteenth birthday. There should be little, if any, variance in the laws of the different States. School districts failing to enforce the provisions of compulsory education laws should be penalized by a loss of a portion of the public-school revenues.

The CHAIRMAN. I shall now call on Dr. Cooley, of Chicago, for his paper, "Should public vocational training of high-school grade be organized as a course or courses in the regular high school, or in a separate school established primarily for vocational training?"

Mr. COOLEY. It is with some embarrassment that I rise to discuss this question. I have been discussing it in the western part of our country in connection with agitation for legislation, and in connection with the work done by the Commercial Club of Chicago. It is almost impossible, therefore, to separate the logical from the personal motives. I think I should say that I am not connected with any club of any sort whatever. I am a free lance, and rather deplore the fact that I am not able to avoid the convictions I express in this paper on the question of control in the vocational schools. I went over to the old country as firmly convinced that we ought to take the vocational schools into the present school organization as anyone in this room. It is a positive detriment to me personally to hold the views I do hold, and I should be happy if I am given credit for being honest in the statements I make. I am going to present the argument in the way I was converted, the way it was told to me. I am going to tell you what persons said to me—the arguments presented to me as I traveled about the Old World, the conclusions that led me to change my viewpoint, and that led these men to change theirs.

SHOULD PUBLIC VOCATIONAL TRAINING OF HIGH-SCHOOL GRADE BE ORGANIZED AS A COURSE OR COURSES IN THE REGULAR HIGH SCHOOL OR IN A SEPARATE SCHOOL ESTABLISHED PRIMARILY FOR VOCATIONAL TRAINING?

By EDWIN G. COOLEY,

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The ready answer to this question is: "Put these courses in the regular public schools. Why duplicate boards of education, teaching force, and plant? Organize the public schools so as to provide education for all, for all purposes, including training for breadwinning. Why separate vocational from academic training, to the impoverishment of both?"

These statements indicate the general way in which 9 people out of 10 discuss the question. This was my answer for years in the face of the strongest opposing testimony and experience. This was the historic answer of England, Ireland, Scotland, Sweden, Holland, Germany, Austria, and Switzerland, but in each of these countries it has come about that they have provided or are providing special machinery for managing vocational schools. The history of the movement for vocational schools

in Germany will be helpful in showing the reasons for this right-about face from academic prepossessions on this subject.

In two numbers of the German continuation school magazine, *Deutsche Fortbildungsschule*, for 1914, there is a discussion of the relation of the continuation to the elementary school, by Director A. Haese, of the schools of Charlottenburg, one of the most progressive cities of the world. Director Haese has been president of the Prussian association of continuation school teachers, and later president of the continuation school teachers of all Germany, and he is recognized as an authority on the subject of vocational schools. What he says about continuation schools will apply as well to other vocational schools for youths between 14 and 16, the age of continuation school attendance in Germany.

Comenius, in his "*Didacta Magna*," gives the key to the understanding of the cultural school of modern times: "Teach everything to everybody." The attempt to do this has gotten us into no end of trouble in the last century. We are beginning to see that this is impossible. All do not have the time or the capacity to learn everything, to say nothing of their lack of an interest in everything. Specialization has become necessary in education above the elementary school, as it has in every human activity and interest.

The economic situation of the parent has often been a decisive influence in fixing the limits of the education of the child and the character of the school. Historically speaking, there have always been differences between the school facilities offered to the children of the poor and the well to do. In all countries it has been customary to cut the thread of school education when the child is old enough to produce economic value, and when the necessities of the parent compelled the utilizing of this economic power of the child. This is by no means intended as the description of an ideal, but as the statement of an historic fact that it is foolish, and even criminal, to ignore when considering the development of an educational system for all the people.

In earlier times children could be utilized economically without special preparation. Simple work on the farm, or in the industries using simple tools, was the rule. In the eighteenth century the introduction of great industrial enterprises and the principle of the division of labor changed the situation. The increased utilization of the forces of nature made necessary a great number of small mechanical helps requiring some slight direction by the hand of man. This led to an increased employment of children, and soon made necessary legislation fixing limits to this employment, as it brought out only too strongly the contrast between the children of the poor and those of the well to do.

People with a sense of justice and a sympathy with the poor soon set about to reconcile this contrast and do something toward equalizing the chances of all, at first through the founding of Sunday schools. Instruction here was to be given not only as a protection against superstition and stupidity, but as a compensation for the devastating effects of the change in the system of labor brought by the factory system. In the Sunday school founded in England by Robert Raikes, people saw a means of dealing directly with the effects of industrial work and bringing the school and the industries into reciprocal relations. As Karl von Raumer, the great historian of German pedagogy, says, "Life began to maintain its rights against the school." It is interesting to note that Adam Smith in his "*Wealth of Nations*," published in 1776, urges the providing of the working youth with a better system of education as a compensation for the damage done to them by the new system of labor.

The instruction in the schools reflected the prevailing economic interest. Everywhere people sought to produce value; instruction was to be made serviceable to the production of value. A reform of the elementary school was sought by the creation of industrial and work schools. Education for efficiency and economic utility was to be reached, not only by the introduction of spinning, knitting, basket making, etc., but by founding school workshops for economic production. The educational motive

was almost entirely left out of consideration. This prostitution of the purposes of the reform was attacked by Niemeyer, who insisted that "the school should not be a factory, but an educational institution. Instruction as well as work should educate mind and body and make them strong and willing to work; but not use the man, or, at least, not the child, as a machine."

The agitation for vocational schools did not cease with these unfortunate attempts to introduce practical work into the elementary school. A new type of school was pushed in between the elementary and the classical school, the *Realschule*, with the emphasis upon the *real*, a word which has much the same meaning in German as in English.

The purpose of the *Realschule* was to serve the merchant or the handicraftsman who did not care for the classical school. It was a superstructure upon the elementary school, with the standing of the lower grades of the classical school. It was regarded as a continuation of the elementary school, a middle school with all-day instruction. It aimed to prepare for a vocation which was to be chosen later, and it took into consideration practical life in general. Exactly like the classical school and the university, it sought to unite a preparatory training with a general cultural course. It attempted to prepare professional people, artisans, farmers, soldiers, and peasants for their vocations, and for this purpose introduced courses in all sorts of practical subjects.

This attempt to unite vocational and cultural programs under one management seems to have been unsuccessful. Von Raumer says of it, "The school should, indeed, prepare for life, but not forestall it. The school should not attempt to teach what only life can teach." He asks, "Are not such Real universities impossible, because most vocations have in them a peculiar life element? The miner must finally be educated in the mountains, the sailor on the sea, the farmer in the country, even if they all secure their general education in the *Realschule*. Indeed, in the case of apprentices in many arts and crafts should not a real practical learning and practice of their art or craft under a practical master be joined to the more or less extended first instruction, and a finer artistic and scientific education follow the years of apprenticeship?"

Director Haese adds, "It has happened, curiously enough, that modern continuation school pedagogy can appeal, with all its demands, to so great an authority as Karl von Raumer, who in 1842 laid down demands which are valid to-day, namely:

"1. Vocational schools should carry on vocational work only. An amalgamation of the cultural with the vocational school leads to mistakes. In such cases the vocational schools do not get a fair chance.

"2. General cultural schools should carry on general education only as a general preparation. They can not serve all vocations in detail, they can not grasp the universal, if they would not go astray in false paths.

"3. Vocational education is best secured when the practical work which goes before and with the master's teaching is followed by the theoretical vocational training."

During the nineteenth century the work in the Sunday school took on a more technical character; the great art-trade, drawing, and commercial schools were founded; foreign vocational schools were visited; and a wide interest in the movement prevailed. There was, however, little ability to turn this interest to account. Director Haese says, "Successful school work requires the support of society outside and the ability to work over properly the material inside the school. The latter was lacking."

Director Haese sums up the situation as follows: "A historical survey establishes the fact that in Germany (1) the general cultural schools attempted at first in their educational work to give a fair trial to the vocational school idea, in accordance with the economic ideal, but that (2) the economic as well as the vocational school idea in the general school led to degeneration and the vocational work was pushed out; that (3) vocational schools in accordance with economic ideals were next founded, independently, in the form of commercial, drawing schools; that (4) the industrial

continuation school split off from these schools, in accordance with economic and social ideals, as a new, separate, and independent institution; and that (6) the independence of the continuation school, in relation to the elementary and art-trade schools, must be continually and emphatically insisted upon."

He adds that many misunderstandings and improper conclusions are to be explained from the fact that, in addition to lack of historical insight, sufficient consideration has not been given the logical and essential differences between the elementary and the continuation schools.

First, there is the natural difference in the ages of the pupils; in the elementary school we deal with children, in the continuation school with boys and girls in the years of unrest between 14 and 18. In the elementary school the bodily and spiritual powers are too plainly in the stage of genesis and growth, while in the period between 14 and 18 the bodily and spiritual powers are directed in a much higher degree toward systematic activity in pursuit of a definite aim. Further, the life conditions in the two schools must be entirely differentiated. In the elementary school the subject of education is passive under the protection of the parental home, the school, and the public. In the continuation school the pupil is actively employed in economic work and exhibits in consequence more activity in his life functions than a school child. If one therefore considers the assimilation of ideas (Haase is here referring to the well-known Herbartian formula), the parental home forms for the school child the "life group" (Lebens-Gemeinschaft) of the first class, the school that of the second class, the surrounding world that of the third class. With the continuation school pupil, on the contrary, the vocation, the battle of life, is the life group of the first class, the parental home that of the second class, the school that of the third class.

Further, the life content of these two sorts of pupils is different. The range of ideas of the elementary school pupil extends to the most general phenomena, and his activities take place in the direction of the general aims of human life. In the case of the continuation school pupil the general range of ideas is widened in definite places by special ideas, and his activities are directed to the definite aims of vocational life. With the elementary school pupil it is more a question of an unconscious and indefinite movement toward a purpose set for him, without the economic motive. In the case of the continuation school pupil the activity is a conscious movement toward a new aim, wherein the economic motive becomes of special importance. With the elementary school pupil the ideals are often fantastical and without the correction of experience and reason. It is the age of fairy tales. In the case of the continuation school pupil the ideals take a practical direction and are much more plainly under the correction of experience and reason.

With the school child the range of ideas is gained from experience in connection with the parental home and in human life in its most general forms. In the case of the continuation school pupil something new is added to this experience, namely, the building up of a range of ideas out of the idea of the vocation and out of human life as particularly related to the vocation. In the elementary school knowledge plays the leading rôle. The life around, and the power to do, have only a tributary part to play. With the child ideas from the fields of economics and technology are few in number and often lacking in clearness of definition. In the case of the working youth ideas from the fields of economics and technology predominate. With the school child memory controls; in the case of youth, reason steps into the foreground. During the years of attendance at the elementary school will and action are under the mastery of example, habit, and obedience to orders. In the case of the youth the beginnings of an independent personality make themselves effective in relation to will and action. The sharp separation from life in general through the entrance into vocational life forms out of the youth a vocational and often an economically independent personality. These circumstances have this effect, that the working youth generally begins much earlier to work out and develop an independent

personality than would be the case under other conditions. From the psychological point of view we can explain the fact that a school child comes into our consideration only as socially dependent, while an apprentice or a youthful worker, in comparison with youth in other vocations, develops earliest into a socially independent personality.

Out of these natural and psychological differences there necessarily arise pedagogical differences. In general, the work of instruction will be more highly prized by the child than by the working youth. With children the school instruction forms the essential part of their life work, the universal means of culture for the rising generation. In the continuation school the instruction is only a fraction of the life work, an auxiliary in relation to which the bodily vocational work is represented as more important and of higher value. The instruction of the elementary school is universally of a general cultural character. It is selected with the purpose of communicating fundamental preparatory knowledge and presenting it clearly to the child. In the continuation school it is a special material for a perfectly definite vocation. The vocational educational material is naturally constructive and definite, and its presentation in the continuation school occurs in connection with the practical and applied. If we turn our attention to the purpose of the instruction it appears that in the elementary school general training stands in the foreground, a general education that prepares for life only indirectly. Practical life is valued in the elementary school only so far as it can be subordinated to the general point of view. In the continuation school the purpose of instruction is vocational training, special training directly for a definite vocation, and the practical life, therefore, maintains its rights from the point of view of the vocation. The care of the young, in general, is laid upon the elementary school. Its problem is to raise the children of the people to a definite level of culture as a minimum below which none may fall. In the continuation school a bit of self-activity is added on the part of the pupil. The school work for the rising generation must reckon with this self-activity and self-interest if it is not to go wrong. On this account, in the elementary school, the more abstract culture of the mind stands in the foreground, while in the continuation school the impulse of self-preservation, the ideal of a vocation, breaks a path for itself without our aid.

Director Haese sums up as follows: "When we survey these essential differences we come to the conclusion that the continuation school is logically a thoroughly independent form of school, and no appendage of the elementary school or competing institution with it. It has, of course, the closest relations to the elementary school, is its brother, and works upon the same foundation. As an organization it is something absolutely independent."

I am glad to be able to introduce this translation and paraphrase of Director Haese's article for two reasons: He is one of the greatest leaders in the movement for vocational schools in the world; and he has been quoted in the United States as a supporter of the position that the separation of these schools in Germany was on account of difficulties concerning religious instruction. Director Haese says he knows of nothing to support this contention. His reasons for the present German policy I have just given you.

In Austria the course of things has been about the same: (1) academic control; (2) introduction of trade instruction into the lower schools; (3) combination of trade and academic instruction in Realschulen; (4) subordination of vocational to academic influences; (5) consequent change to an independent system of schools in 1908, under the ministry of public works.

In Switzerland the various Cantons have independent systems of schools, and consequently, a variety of organizations. In Canton Zurich, perhaps the most important one, the different vocational schools have special local boards and usually independent higher boards. Herr Biefer, the Swiss expert on vocational education

employed by the department of industry of the Federation, discusses the question of control in his work on "Methodik des Unterrichts an gewerblichen Fortbildungslernen," pages 51-52, as follows: "The school management, the commission of instruction or inspection, is to be selected from those circles that have special interest in the school. In foreign countries the industrial circles were won over by granting them a strong representation in the organization for inspection. In Wurtemberg the local board of inspection is, according to the decree of the ministry, therefore constituted so that only persons will be chosen as members who have an understanding of and an active interest in industrial instruction. At least half of the members must belong to the industrial class. It is self-evident that, in connection with the vocational school, first those concerned, namely, the employers, with whom the young people are in apprenticeship or otherwise employed, must be interested in the supervision of the industrial continuation school. Persons from practical life are necessary, in the first place, for the correct judging of the needs and work of the industrial continuation school; the more the masters are interested in it the more friendly, therefore, they become, and the more readily they will make the sacrifices laid upon them. If the industrial continuation school is not to appear as something strange and artificial, we must draw the industrial classes into active cooperation, must seek to maintain continually their sympathy for the school. The cooperation of people from the practice preserves the industrial continuation school from the eventual flattening out into a general continuation school. I am of the opinion that vocational continuation school should not be placed under the [academic] school board, even if they are able to transfer the supervision to a technical commission. A representation in the supervising commission should be granted to the school board and, perhaps, also to the communal authorities, but the majority of the members should be chosen from the vocational classes interested."

Herr Biefer is the authority consulted and quoted by the author of the recent pamphlet published by the United States Bureau of Education. It is a curious fact that in the translation published by the Bureau of Education the statement with regard to supervisory boards is omitted, overlooked, I suppose.

In Sweden the various industrial schools have been connected until the present time with the academic school, as both are under the ministry of education. A royal education commission, after a five-year investigation, reported in 1912 on the reorganization of these schools. Among other things they state: "It (the commission) therefore does not hesitate to return to the plan proposed by Wallmark in 1830, and again by the commission in 1872, but never, to the great hindrance of technical education, carried out, namely, that the vocational schools be under a separate board of control."

In Holland the only form of vocational school that has attained any great prominence is the agricultural school. These have been taken over by the ministry of agriculture in spite of the fact that Mynherr Von Hoek was formerly an elementary-school teacher. In Ireland, after a long period of experimentation with the usual school organization, a special board of agriculture and technical education has been appointed to manage the vocational schools of the island. In Great Britain the Scotch organized a special department of agriculture to look after agricultural education in 1912, while England placed the agricultural schools under the department of agriculture in the same year, over the protests of the teachers' federation there. An agitation to put the industrial schools under the boards of trade had begun when the present war broke out.

Our own experience is less convincing but will, I believe, bear the same interpretation. Our manual-training high schools have gone or are going the way of the Realschulen mentioned above. They prepare for commercial and administrative positions, for work in drawing-rooms and for preparation for higher schools—use-

ful work, no doubt, but not by any means the work done by the vocational continuation, lower engineering, and building trade schools of Germany. They are not usually in close enough touch with actual trade conditions to perform this task under the present system or organization.

It is, perhaps, too soon, to be sure about the plans now in operation in America, but I am satisfied that Wisconsin is doing as much as any State and doing it without friction and without an unreasonable duplication of expenditure. The plan there secures practical local control without separation from educational ideals and educational administration. It does not forget the man and the citizen while training the workman, and it prevents the subordination of the vocational work to the academic ideals that have wrecked so many well-meant attempts "to give life its rights as against the school."

The CHAIRMAN: The next paper on the program is that of Mr. John Dewey, on "The need of industrial education in an industrial democracy."

THE NEED OF AN INDUSTRIAL EDUCATION IN AN INDUSTRIAL DEMOCRACY.

By JOHN DEWEY,

Professor of Philosophy, Columbia University, New York City.,

The need for industrial education may be approached from many standpoints. Industrial education may be treated as an indispensable factor in material prosperity, or as a factor in promoting the ability of a nation in the competitive race for commercial supremacy among nations—a point of view from which the example of Germany is urged. Or it may be regarded from the standpoint of its effect upon the contentment of the workers, or as a means of providing a more stable and efficient set of employees, and reducing the waste now found in most manufacturing enterprises. All of these things have their importance. But they all look at education as an instrument for external ends, and they pass lightly over that part of the subject represented, in our title, by the words, "Education in an industrial democracy." The standpoint from which we are to approach the matter is, in short, that of the demands laid upon education by the need of fostering democracy in a country largely industrial, and where the need is recognized of making the spirit of democracy permeate industry.

Hence, a few words about democracy itself seem to be called for. Democracy has its political aspect. Probably this is the first aspect to present itself to view. Politically, democracy means a form of government which does not esteem the well-being of one individual or class above that of another; a system of laws and administration which ranks the happiness and interests of all as upon the same plane, and before whose law and administration all individuals are alike or equal. But experience has shown that such a state of affairs is not realizable save where all interests have an opportunity to be heard, to make themselves felt, to take a hand in shaping policies. Consequently universal suffrage, direct participation in choice of rulers, is an essential part of political democracy.

But political democracy is not the whole of democracy. On the contrary, experience has proved that it can not stand in isolation. It can be effectively maintained only where democracy is social—where, if you please, it is moral. A social democracy signifies, most obviously, a state of social life where there is a wide and varied

distribution of opportunities; where there is social mobility or scope for change of position and station; where there is free circulation of experiences and ideas, making for a wide recognition of common interests and purposes, and where utility of social and political organization to its members is so obvious as to enlist their warm and constant support in its behalf. Without ease in change, society gets stratified into classes; and these classes prevent anything like fair and even distribution of opportunity for all. The stratified classes become fossilized, and a feudal society comes into existence. Accident, rather than capacity and training, determine career, reward, and repute. Since democracies forbid, by their very nature, highly centralized governments working by coercion, they depend upon shared interests and experiences for their unity, and upon personal appreciation of the value of institutions for stability and defense.

Such qualities as these, such qualities as insistence upon widespread opportunity, free exchange of ideas and experiences, and extensive realization of the purposes which hold men together, are intellectual and emotional traits. The importance of such qualities is the reason why we venture to call a social democracy a moral democracy. And they are traits which do not grow spontaneously on bushes. They have to be planted and nurtured. They are dependent upon education. It is no accident that all democracies have put a high estimate upon education; that schooling has been their first care and enduring charge. Only through education can equality of opportunity be anything more than a phrase. Accidental inequalities of birth, wealth, and learning are always tending to restrict the opportunities of some as compared with those of others. Only free and continued education can counteract those forces which are always at work to restore, in however changed a form, feudal oligarchy. Democracy has to be born anew every generation and education is its midwife. Moreover, it is only education which can guarantee widespread community of interest and aim. In a complex society, ability to understand and sympathize with the operations and lot of others is a condition of common purpose which only education can procure. The external differences of pursuit and experience are so very great in our complicated industrial civilization that men will not see across and through the walls which separate them unless they have been trained to do so. And without this lively and ardent sense of common life, it is hopeless to secure in individuals that loyalty to the organized group which needs to be an animating motive of conduct.

To recall these generalities, these commonplaces, would be idle were it not that there is a tendency to drop them from view when the topic of industrial education is under consideration. Its purpose is often thought to be so much narrower, so much more practical and technical, than that of other established modes of education that these features may be, nay, must be, left out of account. But the contrary is the case. Just because of the part played by industry in modern life, an education which has to do with preparation for it must bear these considerations in mind more than other forms, if democracy is to remain an actuality. Just these things provide the controlling considerations for deciding the curricula, methods, and administration of a system of industrial education.

There are many phases of industry, as that is at present carried on, which are unfavorable to a genuine democracy, just as, on the other hand, the development of modern industrial and commercial methods has been a chief factor in calling political democracy into existence and endowing it with social aspirations. There are extreme divisions of work between the skilled and unskilled, and also between the most skilled workers on the technical side, whether inventors or doers, and the managers on the fiscal and marketing side. These tend to segregate men and women into exclusive classes. The difference between those who can barely maintain a low standard of living and those who are relieved by circumstances from any responsible thought for expenditure, and hence give themselves up to display and idleness, has

never been so large or so overtly conspicuous as it is to-day. Older divisions of master and subject class tend to reinstate themselves in a subtle form.

Machine industry, moreover, tends to reduce great masses of men to a level where their work becomes mechanical and servile. Work loses its intellectual and esthetic caste and becomes a mere necessity to procure the pay which buys daily support. The machine operator engaged in manipulation of a machine becomes identified with the monotonous movements of the monster he tends. As long as he has to do new things, he learns. The moment he has mastered his unchanging work it masters him; its habits absorb and swallow him. Employers whose methods have bred lack of initiative and have practically forbidden workers to think then complain because men can not be found for places of greater responsibility. But the evils are far from being confined to the laboring class. When social responsibilities have at most to do with the expenditure of wealth, not with earning it, when business is pursued not as an exercise in social cooperation but as a means to personal power, the mind is so hardened and restricted that democracy becomes a mere name.

To recall such dangers is to recognize some of the offices thrust upon industrial education in a democracy. To counteract the soulless monotony of machine industry, a premium must be put upon initiative, intellectual independence and inventiveness. Hence, schooling must not model itself upon the automatic repetitiousness of machines, whether in the name of the false gods of practical skill or of discipline. Personal control of power, strong discontent with whatever subordinates mental capacity to merely external regulation, must be made primary. The imagination must be so stored that in the inevitable monotonous stretches of work, it may have worthy material of art and literature and science upon which to feed, instead of being frittered away upon undisciplined dreamings and sensual fancies. Since new inventions and applications of science are actively remaking technical and technological methods of industry, the desire for immediate results and immediate efficiency must be held in check so as to secure powers which will enable individuals to adapt themselves to inevitable change—so that they will not become helpless burdens on society when the methods in which they have been trained pass away. Moreover, since the worker is to be an integral part of a self-managing society, pains must be taken at every turn to see that instead of being prepared for a special exclusive practical service, as a hide might be prepared for a shoemaker, he is educated into ability to recognize and apply his own abilities—is given self-command, intellectual as well as moral.

Let it not be thought that this is a plea for the continuation of the older so-called "general education," on the ground that it also made its plea for training general capacity and brought the individual to a consciousness of himself and his surroundings. The material of this traditional general education is not adapted to the needs and activities of an industrial society; it was developed (as were its methods) in times when our present industrial society was not. The simple fact is that no attempt has ever been made to discover the factors of scientific and social importance in present day industry and in a common democratic life so as to utilize them for educational purposes, in the way in which the work of selecting the factors of value in a non-industrial and feudal society was done by our spiritual progenitors. The first thing which has to be done by a system of industrial education in an industrial democracy is to study the most important processes of to-day in farming, manufacturing, and transportation to find out what are the fundamental and general elements which compose them, and thereby develop a new kind of general education on top of which the more special and technical training for distinctive vocations may be undertaken.

As new subject matter is needed, so are new methods. Our inherited instruction knows, in the main, two kinds of methods. One is that of habituation in various specialized modes of skill, methods of repetition and drill, with a view to getting

automatic skill. This is the method which is most likely to be resorted to in an unintelligent industrial training. It is adapted to securing mechanical proficiency in a narrow trade, but is no more adapted to the specific needs of industrial democracy than is the other inherited method—the theoretical and scholastic method of acquiring, expounding, and interpreting literary materials. What is needed is a recognition of the intellectual value of labor—the same kind of recognition of intellectual results in facts, ideas, and methods obtained from ordinary industrial materials and processes that the laboratory (significant name) has brought about for a limited range of materials and processes. Or, put the other way about, what is needed is development of laboratory methods which will connect them with the ordinary industrial activities of men. In that case there will be no danger that the necessary personal insight and initiative will not be secured.

The value of the older humanistic methods was that they had a vital relation to human affairs and interests. But that is a reason for attempting to discover the humanism contained in our existing social life, not for the reverse policy of despising the present and taking flight to the past. I do not underestimate the difficulties in the way of taking a spiritual survey of our present industrial society and applying its results to education. Strong class interests stand in the way, for such a moral census would be sure to utilize education as a means of bringing to more general recognition the evils and defects of present industrial aims and methods, and in making more widespread a knowledge of the means by which these evils are to be done away. An effective study of child labor, of the sanitary conditions under which multitudes of men and women now labor, of the methods employed in a struggle for economic supremacy, of the connections between industrial and political control, etc., and of the methods by which such evils may best be remedied is a need of any education which is to be a factor in bringing industrial democracy out of industrial feudalism. But to propose this is to invite the attack of those who most profit by perpetuation of existing conditions. Yet since this knowledge is an obvious concern of the masses, and we have already a political machinery adapted for securing control by the masses, this spirit is bound in the future to animate our educational system. In the universities, in spite of their seeming closer connection with existing economic forces, this scientific spirit has already come into education. As the merely propaganda and the merely philanthropic spirit give way to a scientific spirit, it will find its way also into lower education, and finally become a part of the working mental disposition of the masses.

It hardly needs to be said, in closing, that it is a need of industrial education in an industrial democracy that its administration be kept unified with that of ordinary public education. To make it a separate system, administered by different officers having different aims and methods from those of the established public school system is to invite the promotion of a narrow trade system which shall in effect make the pecuniary, rather than the social and democratic, factors supreme in industry. The natural counterpart of free and universal public education is a system of universal industry in which there are no idlers or shirkers or parasites and where the ruling motive is interest in good workmanship for public ends, not exploitation of others for private ends. This is the reason that industrial democracy and industrial education should fit each other like hand and glove.

The CHAIRMAN. Our next paper is by Dr. H. J. Waters, president Kansas Agricultural College, Manhattan, Kans., on "A national system of agricultural education."

A NATIONAL SYSTEM OF AGRICULTURAL EDUCATION.

By H. J. WATERS,

President Kansas State Agricultural College.

There are two principal classes of society in any country, the one rural and the other urban. Each is dependent upon the other for its highest development. The greatest misfortune that can befall any nation is for its rural and urban classes to fall apart.

There ought not to be any obstacle to the free intermingling and intermarrying of the country and town people. It ought not to be true that the town girl would rather marry a drug clerk or an omnibus driver than an industrious young man with a farm. Conditions under which the best women are not content to live will not long attract good men. It ought to be true that no one could determine by their dress, their manners, or their culture, which persons came from the country, and which came from town.

No other class has had so much gratuitous advice and assistance as the farmer has had. His business is fundamental to the welfare of everybody, so everybody feels free to take a hand in helping him run his business. Fortunately, the farmer has had his feet firmly planted on the earth and has not been very quick to heed the many suggestions offered concerning the way in which he should cultivate his soil, feed his stock, or manage his business.

WHY TEACH AGRICULTURE?

We are all interested in keeping the farmer's children on the farm and view with alarm their coming to town to live. It does not occur to us that if the farm possesses so many advantages over the city as a place in which to live and to make a career, that our first duty is to our own children and that we should be bringing them up with a desire to live in the country and to till the soil. Such, however, is not the case. We think of instruction in agriculture in the schools as entirely for the farmer's children, and for the sole purpose of keeping the farmer's children on the farm.

The primary purpose of teaching agriculture is to create an intelligent interest in this fundamental industry. Human interest is the most difficult and costly thing to obtain and is our most precious asset once it is acquired. Teaching agriculture broadens the vision of the child whether he lives in the town or in the country, and widens his range of choice of occupation. In a democracy the utmost freedom in the choice of an occupation is the fundamental right of every child and this right must not be abridged. If the public schools of the city sought to make blacksmiths of the sons of the blacksmiths, and to induce the sons of the bank director to follow in the footsteps of their father, the country would be shaken with protest because the public school—the most powerful agency left us with which to promote democracy—was being employed to destroy democracy. The boy or girl brought up in the country is entitled to as much freedom of choice of occupation as is the boy or girl brought up in town, and is entitled to as substantial help from the public schools in making an intelligent choice.

TEACH THE TRUTH ABOUT THE CITY AND ABOUT THE COUNTRY.

Formerly the differences between the city and the country were much exaggerated. The young people of the country were taught in their homes, in the school, and through the literature placed in their hands, largely to overestimate the advantages of city life, and they were not taught correctly to comprehend its disadvantages. Likewise, the people of both city and country were led to exaggerate the difficulties and drudgeries of country life, and were not made fully to appreciate the great and peculiar advantages of that life.

The trend cityward, therefore, has been partly due to the half-education which prevailed in the rural districts, and which gave farm boys and girls glimpses of a more attractive city life than really existed, and did not teach them the true attractiveness of country life, and how they might attain their ideals in the country.

City children should be taught about the country, its opportunities, its beauties, its profits, and its advantages, as well as about its limitations and its labors. They need to be taught, not alone of the sweats and toils of the farm, but that the chances for moderate success, which is as much success as the average may hope to attain, are best in the country; and that the country is the place in which human life may flower into splendid physique, strong mind, and sound morals.

GIVE THE COUNTRY A FAIR CHANCE.

We are now seeking, through a more extensive and more practical education, to improve conditions in the country that it may successfully compete with the city. The plan clearly recognizes the elementary principle that people will quickly discover superior opportunities to secure an income and to procure the satisfactions of life. Therefore, if the rural community does not afford the kind of life that ought to attract a part of the best of the city children, it can not be expected to hold a fair share of the best of the country children. The fundamental remedy must be sought in the life itself. Altering our attitude toward rural life can have little effect when applied as a sole remedy. This has been the primary weakness of all previous attempts to hold a proper proportion of the best people on the land, and every such attempt has failed. The remedy can be effective only when the conditions on the farm are such as successfully to compare with those of the city.

If farming offered as good business opportunities as may be found in the city, and if the country afforded as good social, school, and church facilities as does the city, there would be no complaint of too few people on the land. A system of agricultural education to be entirely successful, therefore, must reach all the people, for interest in agriculture must be made universal.

THE UNITED STATES TYPICAL OF PAN AMERICA.

It is true that within recent years the ratio of the rural to the urban population has declined in most countries of the world, yet the dependence of everybody on the products of the soil has greatly increased.

Manufacturing has recently gained rapidly in importance and has become a city industry, but its dependence upon the farm for raw material was never so great as now. If the farmer refused to make his contribution to manufacturing, nine-tenths of the factories of the United States would close their doors.

In the United States, which may be taken as a type of the Pan American countries, of the raw material used in manufacturing, one-half of 1 per cent is derived from the seas; 5 per cent from the forest; 13 per cent from the mines; and 81 per cent from the farm. The children of the man who answers the call of the factory whistle should be taught that not only the clothes which their father wears, and the food contained in his dinner pail, but also the materials which provide him a chance to work and afford the family a living, come from the farm.

The children of those who are engaged in transportation should understand that it is the soil-produced material which affords them nine-tenths of their employment. The merchants should realize that nearly all the goods they buy and sell came originally from the farm. The children of the banker ought to know that a large part of the value represented by every dollar which reaches the bank vault was produced in the country, and that in the long run it makes as much difference to them as it does to the children of the country how much of each dollar remains in the country with which to build the right sort of country life.

CITY AND COUNTRY PROGRESS TOGETHER.

The city children ought to understand that though the farmer has undertaken the most important task of any man, that of providing the world with its food, clothing, and the raw material for its industries, he never has had and probably never will have much to say regarding the conditions under which he will discharge that task, and these children should understand that the way in which society determines these conditions will in turn determine the standing and progress of both city and country. City children should appreciate the limitations of farm production and realize that conditions which they impose that are not to the best interests of the country will not in the end be for their own best interests. They should early learn that no civilization has withstood the effect of the decay of its rural people.

Occasionally a nation may be so situated as to support itself with commercial and transportation enterprises alone, but the exceptions will always be few to the law that a people who forget agriculture can not long survive.

AGRICULTURE IN EVERY COURSE OF STUDY.

No system of agricultural education, therefore, can be broad enough to meet the needs of a modern civilization that does not recognize the principle that interest in agriculture is not limited to those who till the soil but ought to be universal.

It must embrace research as well as instruction. It must reach as high in our colleges and universities as does any other kind of education, for how else may the dignity of agriculture be maintained? And it should extend as low as is required to meet the needs of the children of the grades and of the humblest farmer of the land. It must be national in its scope.

It is a narrow view which limits the scope of agricultural education to the field covered by the agricultural colleges of the country.

Only a small part of the people of any country ever attend institutions of college grade, and in the nature of the case only a part of these will study agriculture. Therefore all the agricultural colleges which any country will find it profitable to support when working ever so diligently and efficiently will not be able to train more than the leaders in agriculture.

The facilities of the high schools of the country must be employed, and the United States at least needs more high schools, especially rural high schools. A good high school should be within easy reach of every boy and girl in the land.

But the problem is by no means solved when agriculture is successfully taught in all the high schools of a country, for comparatively few of those who are to farm will attend a high school. Indeed from 75 to 90 per cent of the boys and girls of the United States leave school and enter life occupations before they are 16 years of age and before they reach the high school.

Perhaps nine-tenths of our farmers have gone directly to their work from the rural school. To reach them with instruction that will make them better citizens and more successful husbandmen and business men means that we must teach agriculture in this school.

EARLY AGRICULTURAL INSTRUCTION A FAILURE.

Although agriculture was man's first organized occupation and has been his chief occupation in every age since, it has been the last subject to be introduced into the course of study of our schools.

The early attempts at teaching this subject in America were failures, principally because the man on the farm knew more about farming than did the teacher. This quickly led to the establishment of agricultural experiment stations, research institutions in which the application of science to agriculture was studied, where the reasons for the most successful farm practices were discovered, and where new and

improved practices were devised. Thus, for the first time in the history of education, a deliberate attempt was made, through a well coordinated system of scientific research, to create a body of knowledge in relation to a subject which it was deemed important to teach, but about which so little of a definite nature was known that it could not be taught successfully.

It is true that scientific research has been a part of the activity of most institutions of higher learning for a long time, but there had not been before an organized, coordinated, and compulsory system of research as a definite part of a great educational program.

AGRICULTURAL RESEARCH A STIMULUS TO OTHER STUDY.

The success of the investigations in agriculture in this country has been a wonderful stimulus to the research activity in other lines. As might have been expected, the first result of this suddenly stimulated activity in research was the accumulation of knowledge more rapidly than it could be absorbed by the farmers and adapted into their practices. A way had to be devised by which to get the man on the soil, who is largely muscle-minded and eye-minded, to adopt these new methods. As a result a system of extension teaching through farmers' institutes, press articles, and farm demonstrations grew up. It is only within very recent years, indeed, since the passage of an act of Congress, by which the Federal Government joined with the States through the agricultural colleges, that the effort to carry this knowledge to the people has become general and effective.

THE SCHOOL-TRAINED FARMER A SUCCESS.

Thus, new as is the system of agricultural instruction, and halting as was its progress in the beginning, it has already marked two distinct and important departures from educational traditions: One in the organized system of research through which a body of knowledge pertaining to the subject was created; the other in an organized system of extension or continuation teaching through which parents as well as pupils were reached with this new-found knowledge. Both of these departures have already exerted a large influence upon general educational thought and practice.

Agriculture is now successfully taught because there is something to teach and because teachers have been trained to teach it. Young men are as well prepared at college to engage in the practice of farming as they are at college to engage in the practice of law, or medicine, or journalism; and the farmer has as much respect for the college-trained farmer as he has for the college-trained lawyer or doctor.

There is no reason why agriculture may not now become the most interesting, the most inspiring and the most educative subject in the school course, which means that it may be the most successfully taught subject in the school.

The CHAIRMAN: The last paper on the program is by Prof. Soule, of Athens, Ga., on "A decade in agricultural education."

A DECADE IN AGRICULTURAL EDUCATION.

By ANDREW M. SOULE,

President of the Georgia State College of Agriculture and the Mechanic Arts.

"Accuse not Nature, she
hath done her part;
Do thou but thine!"

INTRODUCTION.

"A griculture constitutes the paramount and fundamental industry of the world." Strange as it may seem, this ancient proverb has been more perfectly exemplified in

the twentieth century than ever before. The struggle for world supremacy now in progress seems likely to be decided in favor of the nations which can command the largest and most varied food supply. Therefore, nature, as in all cases, is certain to become the determining factor in the situation, and the laurels of victory destined to rest with those who through the development of the human intellect along scientific lines are able to transfer her latent resources into heat and energy-producing units for the proper nourishment of mankind. Small wonder that the terms "scientific agriculture" and "agricultural expert" have become words to conjure with, and it is needless to point out that any plan of national defense calculated to advance peaceful industries or prepare for aggression against neighboring States must take into account how best to mobilize soil, climatic, and crop resources, and maintain an efficient corps of agricultural workers. Under the circumstances, it is not surprising that the attention of educators, publicists and economists has been more generally focused on what is being done to prepare leaders through the training, research, and extension divisions of our agricultural colleges than in any previous epoch. This is a particularly gratifying situation to those who have waited so long and patiently to see this type of education accorded the recognition it deserves, and accounts for the selection of "A decade in agricultural education" as the title of my paper, that I might without prejudice or egotism be able to record something of the transformation wrought in the economic and agricultural conditions in Georgia through the establishment of an applied system of education.

LAYING THE CORNER STONE.

In 1906, the State of Georgia decided to establish a modern agricultural college. Existing conditions rendered a change in agricultural methods necessary, and public sentiment had so ripened and matured that the legislature acquiesced in the demand of the farmers for assistance in their vocation. Funds were appropriated for a central building and a farm of several hundred acres of worn-out plantation land assigned to the college as a domicile. Construction and reconstruction were immediately commenced, and our experiment in agricultural education was under way.

Realizing that any definite advance is predicated upon moving human entities through the slow process of intellectual development, the trustees organized the institution with three distinct ends in view: I. Collegiate instruction for the purpose of developing leadership in all its essential qualities. II. Research, that new data on which to base progress might be obtained. III. Extension teaching in order that the knowledge acquired through the work of institutions at home and abroad might be assimilated by the workers within the State and distributed in simple and concrete form to those who live out in the open country and have thus been most difficult to reach and lift out of the rut of habit and induce to follow constructive methods of practice based on scientific data.

In the beginning there was a divided and wavering public sentiment to contend with which at one moment favored book learning and in the next openly opposed it. Some thought agricultural education would revolutionize conditions in Georgia in the twinkling of an eye; others regarded the undertaking as hopeless and foredoomed to failure. The college began its career in this unsettled atmosphere with the most meager equipment at its command and an unfruitful farm to operate. A corps of instructors had to be literally discovered and employed; a body of knowledge, even if pitifully small and circumscribed, accumulated; and the organization of extension work undertaken along purely empirical lines.

CREATING A FAVORABLE PUBLIC SENTIMENT.

These facts are not cited for the purpose of lauding anything which may have been accomplished for which merit may be justly claimed, but to illustrate the latent

power of an ideal zealously followed out by a devoted board of trustees and faculty, and which has ultimately won for the institution a recognition within the confines of Georgia of which it has reason to be proud, and brought to its support the leaders of thought and industry in every walk of life. To mold public sentiment to a true appreciation of what agricultural education represented and what it might be expected to accomplish with the lapse of time was the first undertaking. To this end two educational trains were operated throughout the State. Every section was brought in contact with the influence of the ideal which the college represented. One hundred and fifty thousand people visited the first train, and three hundred and fifty thousand the second. Its approach to the community was the signal for the declaration of a holiday; city and county officials attended; the boards of education closed the schools and brought the superintendents, teachers, and boys and girls. Representative farmers and planters for miles around were in attendance. Speeches were made and charts displayed by those accompanying the train, and bulletins of a vital character distributed by the thousand. The exhibit cars were the center of interest, and convinced many where oratory had failed. Doubters were dismayed and overwhelmed. The college was submerged with letters of inquiry and requests for literature on every conceivable subject, and thus the great initial victory which every institution must fight for, public recognition, was won.

FORMULATING LEADERSHIP.

As a result a college without a constituency and lacking a student body soon developed a representative attendance, and in the past nine years has enrolled approximately 3,000 students in its long and short courses, representing nearly every county in the State. The increase in the long courses has approximated 185 per cent; and in the short courses 236 per cent—figures which could not have been attained if the institution had not in some way established itself in the affections of the people. Remember also that 46 per cent of our population is colored, and that these figures would have been more than doubled but for that fact.

In this connection it seems appropriate to inquire what a trained agriculturist is worth. Statistics show that the earning power of every man entering a university is increased by about \$20 a day for every day of the four years he is ordinarily in college, or to the extent of \$24,000 for his life earning period. These figures are based, of course, on his public-school training providing a life earning ability of \$32,000, his high-school training of \$48,000, and his university training of \$72,000. Georgia has invested half a million dollars in higher education in agriculture, and according to these figures is destined to secure a return from graduates and post-graduates alone of \$1,920,000; from short course men, based on one-twelfth the return from a college course, \$3,472,000, or a grand total of \$5,392,000. No line of human activity is more likely to give returns equivalent to these figures than agriculture, the least understood, appreciated, or scientifically correlated of our vocations. In fact, what investment can a State hope to make which will pay so large a dividend as the training of her youth to participate with efficiency in her basic agricultural industries.

Thus the foundations for initial leadership have been established, for Georgia has been fortunate in retaining within her own borders practically every man who has ever attended a course at the College of Agriculture, and the great majority of the small but loyal and efficient body of alumni are now working for the State in some capacity. From this it should not be gathered that the policy of the trustees has been narrow, for our faculty is truly cosmopolitan, and good men are eagerly sought for and gladly employed if they are believed to possess merit and capacity. Personally, I feel that the very cosmopolitan nature of our faculty has been a factor of great importance in achieving any success worth recording.

ACQUIRING AND CODIFYING AGRICULTURAL KNOWLEDGE.

The second great problem attacked by the college was the attempt to acquire and codify through research and demonstration a body of scientific and practical knowledge on which to predicate (1) courses of instruction; (2) to furnish the basic data on which to prepare a large and varied assortment of educational and informational bulletins; (3) to provide the workers in the extension service with that array of concrete facts capable of definite application which alone gives them the convincing power which they must possess in order to make their efforts fruitful in results. To this end every worker associated with the college has been urged to develop within his department as much research work as he could possibly carry on with any hope of success. The department laboratories have been equipped with this end in view. A large demonstration field was organized in the very beginning for the purpose of discovering and elaborating fundamental facts, and has been liberally supported ever since. The college farm has been made a very fountain of knowledge.

In 1909 the first state appropriation for extension teaching was obtained, making Georgia one of the pioneers in this movement. Part of this money was used to establish physical and chemical soil surveys, for obvious reasons. Demonstration plats were started on a number of the more important and clearly defined soil types. Test farms were located at strategic points to determine the merits of new strains of cotton and cereals developed in the demonstration field with the idea of extending the area in which cereals can be successfully cultivated, and improving the type and yield of corn, cotton, and other farm crops as well. This work has furnished the ammunition to provide guns of large caliber with a constant supply of essential information, and to keep up that spray of destructive fire against indifference and occasional prejudice which alone enables an agricultural college to carry conviction into the hearts of its constituents, to sweep aside superstition and error, and to enlarge the boundaries of the farmers' faith in science as related to the solution of the problems of his vocation.

Thus, the first and second line of intrenchments have been carried by storm and won, and now the college faces one of the most difficult situations in its history; for, having created a desire for organic knowledge, how shall it without doubling, yes, even quadrupling its efforts along research lines feed the voracious appetite which the public evidences and believes correctly that the college should be in a position to satiate? The solution is in the hands of the lawmakers. Do they realize the urgency for action? Do they appreciate the national issues involved?

REACHING THE MAN IN THE FIELD.

And now we come to the consideration of the third line of effort which was early established and which has been assiduously fostered and promoted from the very beginning—that of extension teaching. Was this necessary or essential? Both questions may be answered in the affirmative. Has it been successful? Public sentiment may be taken as a safe criterion in this matter, and in that event the answer would be yes. Agricultural statistics are even more illuminating and positive in the results they portray. Therefore it may be concluded that extension teaching has demonstrated its power, value, and efficiency, and constitutes to-day, when properly sustained and directed, one of the mightiest constructive agencies which has ever been brought to the aid, conservation and redirection, of our agriculture.

In the last eight years 5,179 extension schools, field and miscellaneous meetings have been held through the influence of our extension department, in cooperation with railroads, boards of trade, chambers of commerce, farmers' organizations, boards of education, fair associations, women's clubs, churches, schools, and individuals. In all, 1,282,088 persons, calculating attendance on the number of sessions held, have been reached.

Extension attendance summary.

EDUCATIONAL TRAINS.

Year.	Number meetings.	Attendance.	Miles traveled.
1908.....	150	150,000	5,000
1911.....	158	350,000	5,600

EXTENSION SCHOOLS, FIELD MEETINGS, ETC.

1908.....	42	10,000	15,400
1909.....	144	17,320	35,500
1910.....	200	42,200	85,000
1911.....	200	47,261	95,700
1912.....	479	98,470	106,720
1913.....	1,085	120,155	129,680
1914.....	949	218,083	185,300
1915.....	1,752	228,608	185,686
Total.....	5,179	1,282,068	809,362

The individuals reached constitute about one-half the population of our State, and it is safe to say that the great majority of the progressive citizens and boys and girls living in the open country have been brought directly or indirectly in touch with the work of the college through its associated activities. Observe that the travel involved totals 869,362 miles, and you will glimpse something of the thoroughness with which the State has been covered. These figures do not include the travel of our agents within the county, and which for the year 1915 alone amounted to over 350,000 miles. More than 100 pamphlets have been distributed in editions totaling over a million copies to a large permanent mailing list, while thousands of personal letters of inquiry on an endless variety of pertinent topics are answered each year. A plate service was started several years ago, and more than 170 county papers carry a column or more of timely and helpful advice to farmers each week. The daily papers are supplied directly from the editorial office.

Thus, by the plans perfected, a large measure of personal contact with the man in the field is assured, and his desire for agricultural literature supplied in part at least through bulletins and the daily and weekly press.

THE CORN CLUB MOVEMENT.

The establishment of our extension division has provided some of the most trying as well as entertaining and inspiring chapters in the history of our college. Believing that the man could best be reached through the boy, and that our work should be coordinated with the schools, Georgia was one of the first, if not the first, to establish boys' corn clubs on the basis now so well and favorably known in many States. Corn clubs were first established in 1906, the work being coordinated with that of the United States Department of Agriculture in 1909. The results obtained through this organization seem almost magical. In 1909 the State raised approximately 39,000,000 bushels of corn; in 1915 it harvested 66,600,000 bushels. The average yield for the decade previous to the initiation of corn clubs was 10 bushels per acre; it is now better than 15 bushels. As corn is worth about \$1 a bushel, the increased value of the crop over that produced in 1909 amounted to \$27,600,000. This is truly a phenomenal change to bring about through the agency of boys' work, and is all the more impressive because of the short period in which the result was obtained and on account of the large increase in permanent wealth it insures to the State every year.

There are about 10,500 boys enrolled under our corn club banner. More than 50 of them made over 100 bushels of corn per acre in 1915, at a cost of less than 30 cents per bushel, and were given certificates of merit. Ellsworth Watkins, of Jackson, Ga.,

made the highest yield in 1915. He grew and harvested 166.7 bushels of corn on an acre of ground at a profit of \$137.49. Let us acclaim him. He is a hero in his particular line. Did he not fight a good fight with nature and win? Did he not hold his trust in faithful obligation in spite of every discouragement? Did he not turn a deaf ear to the derisive jest of men and boys of his acquaintance? Yes, and more, for he exemplified self control, devotion to duty, and a sublime faith in his leaders and the cause he espoused. I nominate him as a fit subject for the D. S. O., and who shall say he is unworthy? Ten years ago farmers said corn could not be grown profitably in Georgia. Last year 2,210 boys grew 95,030 bushels on their acre plots, or an average of 43 bushels per acre, at a cost of 42 cents per bushel, and a profit of \$55,117.40.

Not content to have boys grow corn alone, the four-crop club organized several years ago now has a thousand members, mainly of boys graduated from the corn clubs. These boys practice a rotation and grow cotton, corn, oats, and hay on individual acres. In 1915 they made the yields and profits recorded below:

Four-crop club records for State (929 members enrolled.)

Crop.	Average yield per acre.	Average profit.
Cotton.....	1,475 pounds.....	\$28.06
Corn.....	55.1 bushels.....	36.27
Hay.....	3,197 pounds (\$24.53).....	45.55
Oats.....	37.8 bushels (\$21.02).....	
Total profit on 3 acres.....		109.88

What does this participation in the agriculture of the State presage for the not distant future?

In the preceding paragraphs we have a beautiful illustration of that old Bible text, which states: "A little child shall lead them." Here we have an example of what the latent energy of boys may be made to accomplish through the inspiring influence of wise and judicious leadership. Here is provided a convincing example of the power of an ideal which must carry conviction into the heart of even a "doubting Thomas." I might expand at length upon the remarkable accomplishments of the boys' corn clubs, but for the fact that space forbids and results tell their own story more eloquently than words.

GIRLS' INDUSTRIAL CLUBS.

Girls' industrial clubs were formulated in 1912 along the lines so successfully followed with the boys, and they have made an enviable record. There are nearly 4,000 girls enrolled at present. They put up 1,200,000 pounds of canned goods from their $\frac{1}{4}$ -acre gardens the past season. The number of containers used was 332,240. The value of the canned goods from the $\frac{1}{4}$ -acre-club gardens was \$29,588. The average cost of growing the crop was \$5.76 and the average profit per garden \$15.05. As with the boys, certificates of honor are accorded to all girls who make and can over 2,500 pounds of tomatoes or beans from their $\frac{1}{4}$ -acre gardens. Most careful and accurate reports must also be presented, and an exhibit of the finished product made at the county school fair. Thus close observance of business principles, system, accuracy and detail, skill, and sanitation are all impressed on the minds of these young people. Jennie Nichols, of Floyd County, made one of the best records last year. She raised 5,460 pounds of tomatoes on her garden plot, which, when canned, left her a profit of \$86.50. What a world of opportunity and independence this experience opened up to her. I congratulate her on having won her economic freedom and demonstrated her capacity without the ballot; and if we must have a "new woman," let us have more of her kind.

Who can correctly estimate the influence this work has exerted on these girls? Every one knows they will be better and nobler women for having achieved something through associating their effort with nature. Every one knows that their efficiency has been multiplied many times over. Every one understands that they will make more beautiful, attractive, and interesting types of women as a result of the inspiration which problems attacked and success won brings to all. That their work is appreciated in the communities in which they live is shown by the fact that nearly \$10,000 was contributed in scholarships and prizes for their encouragement, aside from any funds appropriated from State, Federal, or local sources for the maintenance of the work.

HOME-BUILDING ACTIVITIES.

Among the other activities which have engaged the attention of our women agents is that of home improvement. For example, 300 fireless-cooker and 2,000 canning demonstrations were made in the homes of adults, and over 450 fireless cookers and 125 iceless refrigerators built. That these women agents are accomplishing something fundamental is best illustrated by the condensed statement of one agent's report, as presented below:

Report of Mrs. E. G. Bond, county agent in home economics, Muscogee County, Ga.

Number women enrolled in home-demonstration work.....	12
Number girls enrolled in garden and canning club work.....	60
Number county meetings held in past 7 months.....	28
Number community meetings held.....	90
Total attendance, 2,000 women and 5,000 girls.....	7,000
Home demonstrations in cooking, dairying, spraying, etc.....	90
Home demonstrations in canning, jelly and catsup making, preparing lunches, salads, breads, etc.....	28

Labor-saving devices installed in homes:

Fireless cookers.....	20
Iceless refrigerators.....	10
Flytraps.....	10
Screens.....	24
Wheel trays.....	4
Cleaning devices.....	5
Dairying appliances.....	6
Home waterworks.....	2

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Bulletins on dairying, poultry management, vegetable gardening, canning, cooking distributed.

Girls' canning clubs report:

Pounds of vegetables canned for winter use.....	22,942
Total value of vegetables from club gardens.....	\$604.32
Pounds of berries, figs, peaches, apples, and pears canned.....	4,000
Cost of production per $\frac{1}{4}$ -acre garden.....	\$4.00
Profit per $\frac{1}{4}$ -acre gardens.....	\$20.00
Highest value per $\frac{1}{4}$ -acre garden.....	\$73.60

(Cost, \$15.30; net profit, \$58.30.)

Number of girls who made caps and aprons for use in demonstrations.....	20
Number clubs which held regular meetings throughout the year.....	10
Number winter-garden demonstrations.....	12

A model kitchen has been established in connection with the rest rooms in the towns and cities of the county. The rest rooms were provided by the ladies' clubs,

and model kitchen by the girls' clubs and the women demonstrators. The club members meet at the rest rooms when they are in town. The canning-club girls have sold all their canned goods to the ladies in the city at casual meetings in the rest rooms.

COORDINATING STATE AND FEDERAL AGENCIES.

The United States Department of Agriculture having early undertaken, through the office of Farmers' Cooperative Demonstration Work, to educate adults with reference to better methods of farming began work in the State of Georgia in the fall of 1907. By this plan an agent was employed in each county, in so far as funds would permit, to give his entire time to instructing farmers with reference to the institution of better methods of practice. Through the assistance of Dr. S. A. Knapp, with whom I am sure you are either acquainted personally or by reputation, the work of the demonstration agents was shortly coordinated with the extension effort of the college. From that date forward a steady and uniform growth has been witnessed along all lines. At present we are cooperating in the most cordial manner with several bureaus of the United States Department of Agriculture and have one of the largest corps of agricultural workers employed in any State.

The supervision of the county agents formerly carried on in association with the Office of Farmers' Cooperative Demonstration Work has now been merged with the States Relations Service as the result of the passage of the Smith-Lever Act. Under this plan Georgia is now employing 135 men and women agents, including 10 State and district supervisors, carrying on work with men in 85 counties and with women in 50 counties. These men and women direct the work with the boys and girls and adults as well. There are some 10,500 boys in the corn clubs, 4,000 girls in the canning clubs, 1,500 members of the pig clubs, and 600 members of the poultry clubs. There are 11,086 farmers and farmers' wives carrying on demonstrations under the guidance of these agents. It will thus be seen that our county agents are in personal contact with about 30,000 individuals living in the rural districts.

Last year the adult demonstrators raised 15,105 acres of corn with an average yield of 40.1 bushels per acre; 6,396 acres of cotton with an average yield of 1,315 pounds of seed cotton per acre; 7,712 acres of oats with an average yield of 52 bushels per acre. Compare these figures with the average for the State and see the influence for agricultural betterment which has been conferred on these farmers through the work of the county agent. In addition, the agents were responsible for the seeding under approved methods of 2,639 acres of clover, 4,013 acres of wheat, 1,085 acres of peanuts, 861 acres of rye, 3,040 acres of cowpeas, 126 acres of vetch, 759 acres of soy and velvet beans, and 750 acres of hay crops. The agents also aided in the establishment of 10,402 acres of pasture land, 10,953 gardens, in the preparation of 62,200 tons of fertilizer, and the pruning and spraying of 4,115 acres of orchards. They have encouraged the stumping of 50,920 acres of land, the terracing of 2,350 acres, and the drainage of 800 more. They are also largely responsible for the purchase of \$500,000 worth of improved machinery. Through their efforts 1,569 pure-bred cattle, principally of the beef breeds, have been brought into the State. Advice has been given relative to the purchase, feeding, and management of thousands of beef and dairy cattle and hogs. At least 50,000 hogs have been inoculated with protective serum, thus effectively controlling the spread of swine plague, and encouraging the development of this industry on a basis somewhat commensurate with Georgia's needs.

One hundred and twenty-eight modern farm buildings have been erected through their influence, as well as 262 silos and 619 dipping vats. Waterworks and lighting systems have been installed in 350 homes and telephone connections placed in 300 more. Groups of farmers have been organized into 77 local cooperative clubs, 48 county or school fairs promoted, and 255 special meetings held. The agents have

made over 3,100 visits to the schools and met personally 49,000 teachers, parents, and pupils. They traveled in their own conveyances 375,000 miles.

These facts and figures should convince the most uncharitable, but since few persons realize the extent of the public-service work performed by a county agent, for your information I present a summary of one agent's activities during the past 10 months:

Summary of work accomplished by J. G. Woodruff, county agent for Clarke and Oconee Counties, Ga.

Miles traveled.....	7, 145
Demonstrators visited and advised.....	576
Cooperators visited and advised.....	175
Hogs inoculated with preventive serum.....	459
Sick hogs inoculated.....	35
Number of sick hogs which died.....	30
Post-mortem examinations made.....	5
Sick animals treated.....	30
Farmers advised as to feeding of their live stock.....	20
Farmers shown over college farm and experimental field.....	110
Bushels of seed corn selected for 1916 planting.....	255
Farmers advised as to seed selection.....	45
Demonstrations of seed testing at schools.....	11
Members of corn clubs.....	208
Members of pig clubs.....	10
Highest yield of corn per acre in Oconee County.....bushels..	82. 5
Highest yield of corn per acre in Clarke County.....do....	77. 1
Orchards pruned.....	6
Orchards sprayed.....	9
Orchards inspected and owner advised as to care.....	18
Tons of lime secured cooperatively for farmers.....	180
Demonstrations established in alfalfa.....	70
Alfalfa seed secured cooperatively for farmers.....bushels..	101
Acres planted to alfalfa.....	244
Acres planted to crimson clover.....	180
Acres planted to bur clover.....	65
Acres planted to sweet clover.....	5
Acres planted to red clover.....	5
Acres on which inoculating material was used.....	20
Inoculation demonstration held.....	20
Lawns established.....	8
Public meetings held.....	21
Attendance at meetings.....	891
Farmers advised in office.....	37
Newspaper articles prepared.....	14
Letters written to farmers.....	559
Pure-bred dairy bulls purchased.....	2
Registered shorthorn cattle purchased.....	20
Number of acres in drainage proposition.....	1, 000

Observe that the hogs saved were alone worth at least \$4,290. The swamp land reclaimed will grow 60 to 80 bushels of corn, and is easily worth \$100 to \$150 per acre. The figures presented in this summary show the potency of the county agent in aiding the farmer in organizing his business along constructive and permanent lines. This man's salary is \$1,500 a year, and he has been worth at least \$25,000 to the farmers of the counties in which he has worked.

WHAT THE RECORD SHOWS.

This cursory review of what has been undertaken and consummated within a decade must suffice for the present. In any event it seems safe to conclude that substantial progress has been made in—

- I. Establishing a college capable of service.
- II. Accumulating considerable essential data of a basic character and formulating and distributing the same.
- III. Organizing a student body and developing some of the necessary leaders.
- IV. Developing and perfecting an efficient system of extension teaching.
- V. Successfully correlating into a harmonious unit all related State, Federal, and local agencies.

With the attainment of these ends in mind it does not seem inappropriate to consider briefly some of the things accomplished for the mental, moral, spiritual, and economic betterment of Georgia's farmers. There has been, for example, a substantial increase in acreage and yield of corn and cotton amounting to over \$50,000,000 a year; a notable increase in oat and wheat production represented by a monetary value of \$10,500,000 annually; the institution of a tick eradication campaign that has released 39 counties in Georgia already, thereby saving to the stockmen in this territory over \$200,000 a year; demonstration of the ability to control hog cholera through the wise use of serum, thereby increasing the number of hogs in the State by nearly half a million head and increasing their value by over \$13,000,000 annually; the introduction and dissemination of thousands of pure-bred animals as shown by an increased value of meat cattle of over \$7,000,000; the definite increase of the farmer's knowledge of fertilizers, thereby insuring their application in accordance with the needs of the soil and the crop; a very substantial increase in the growth of foodstuffs for man and beast, totaling at least \$50,000,000 a year; the organization and support of the corn, canning, pig, and poultry club work, thereby creating a new type of citizen with a better appreciation of the dignity of labor and the opportunity the open country affords; the development of horse breeding on a State-wide basis; promotion of the apple, pecan, and truck industries along constructive lines; and in consequence of all this effort, the enlarged independence of the farmers so that thousands of them are now able to hold their cotton for a satisfactory price, to live largely at home, and provide luxuries for their families, to own automobiles, and to become more important and desirable factors in the life and society of the community in which they live.

A truly wonderful interest has been aroused in all matters pertaining to education. An examination of the record shows that in 1905 there were 42 high schools in Georgia, with a total enrollment of 7,000 and a graduating class of 502; in 1915, there were 191 high schools in Georgia, with a registration of 26,000 and a graduating class numbering 2,437. In the last few years more than \$3,500,000 has been expended in high-school buildings, while the State appropriation for schools has been doubled. In 1870, there were 27.4 per cent of illiterate whites and 92.1 per cent of illiterate colored; in 1905, 7.8 per cent of illiterate white and 36 per cent of illiterate colored; in 1913, 3.6 per cent of illiterate white and 15.7 per cent of illiterate colored. These figures, of course, apply to the school population. They speak more eloquently than words of the attitude now evidenced toward education.

A press propaganda with reference to scientific agriculture has been firmly established, an era of prosperity of a more permanent type than has ever been known before ushered in, and a new appreciation of the duties and responsibilities of citizenship awakened. The interest of the city man in the country and of the country man in the city has been coordinated, and to-day there exists a harmonious spirit of cooperation. This end has been attained through interesting the business man in the welfare of the country boy and girl, and pointing out to him the latent energy of the surrounding territory which might be developed for the benefit, not only of the rural section, but of the city as well if he would only lend his personal influence and financial aid

to the dissemination of necessary information. Even Atlanta has honored herself by entertaining in the homes of her leading citizens over 1,000 boys and girls attending the annual corn show held there for several seasons past. I can not but feel that the engendering of team work between city and country is an enduring monument to the credit of our correlated extension activities, and one of the real achievements of which we have reason to feel proud.

EFFICIENCY AND CULTURE NOT INCOMPATIBLE.

I claim that the type of education under discussion and the extension agencies based thereon is distinctly cultural in value because it takes those who benefit by it out of the class of mere routine. It enlarges their vision; it multiplies their capacity; it changes their conception of nature; it stimulates their imagination; it adds to their value as citizens through increasing their earning capacity, thereby enabling them to provide more liberally for the necessities and luxuries of life to which their families are entitled; it increases their respect for their vocation; it shows them that they may become dominating factors in a given environment; it demonstrates that nature correctly interpreted is our greatest friend and benefactor; and leads them to a true appreciation of the power and advantage which the trained intellect possesses which they very naturally have not always clearly recognized. Any type of education that will accomplish results of this character need not be declaimed as purely materialistic in its tendencies, and therefore calculated to injure present or future generations from the mere fact that it is supposed to have a practical end in view. Let us remember in this connection what Henry Grady said in 1888 of "The South's New Day":

"When every farmer in the South shall eat bread from his own fields and meat from his own pastures and, disturbed by no creditor and enslaved by no debt, shall sit amid his teeming gardens, and orchards and vineyards, and dairies, and barnyards, pitching his crops in his own wisdom and growing them in independence, making cotton his clean surplus, and selling it in his own time and in his chosen market, and not at a master's bidding—getting his pay in cash and not in a receipted mortgage that discharges his debt, but does not restore his freedom—then shall be breaking the fullness of our day."

I claim that it has been demonstrated in Georgia that through the medium of agricultural education and the correlation of research and extension teaching therewith that the State is now more nearly able to maintain and support its present population and the increase which the immediate future insures it than ever before in its history; that the wealth of the State has been materially increased to the advantage of the individual; that a new type of leader has been developed; a diversity in farm practice assured; beginnings in animal husbandry made on a permanent basis; a new faith in the soil established; the necessity of conserving our natural resources and utilizing our stores of latent wealth in a wise and intelligent manner recognized; a belief in the supreme power of education demonstrated; an appreciation of waste, one of the chief ills from which we suffer, more widely acknowledged; and an understanding of the value of constructive leadership more generally accepted than ever before. In the face of these facts, is it possible to believe that money will corrupt or degrade or make inefficient, narrow, selfish citizens? Of course, much depends on how we use it, but I have an abiding faith that men who, even though aided by science and the services of skilled workers, have dug from the soil by the sweat of their brows the wealth they have to dispose of can be depended on to disburse it in a wise, intelligent, and safe and sane manner.

PARTICIPATING IN NATURE'S BOUNTY.

The annual wealth-producing power of Georgia's farmers has increased by at least \$100,000,000 within the last decade. Observe the record as presented. It is conservative in every particular, and is based on figures very carefully collated from a variety of trustworthy sources. It illustrates the generous bounty with which nature is endowed and the liberal reward she stands ready to confer on intelligent effort.

Statistics of Georgia.

	Value, 1910.	Value, 1915.	Difference.
Farm crops:			
Corn.....	\$37, 079, 981	\$66, 600, 000	\$29, 520, 019
Oats.....	4, 236, 625	11, 970, 000	7, 733, 375
Wheat.....	871, 494	3, 754, 800	2, 883, 306
Hay.....	4, 056, 907	6, 800, 000	2, 743, 093
Cotton.....	126, 095, 612	150, 000, 000	23, 904, 388
Miscellaneous crops.....		12, 000, 000	12, 000, 000
Total.....	172, 940, 619	251, 124, 800	78, 184, 181
Live stock:			
Cattle.....	14, 060, 958	21, 440, 000	7, 379, 042
Horses.....	14, 193, 839	14, 875, 000	681, 161
Mules.....	43, 974, 611	43, 200, 000	714, 611
Swine.....	5, 439, 016	18, 836, 000	13, 396, 984
Sheep.....	308, 212	375, 000	66, 788
Total.....	77, 976, 636	98, 786, 000	21, 523, 975

Have you ever thought how many hundreds of miles of beautiful and permanent roadways; how many thousands of homes with modern conveniences; how many consolidated rural schools with attractive grounds; how many churches and libraries could be built with this sum of money? Even if only one-quarter of it be devoted to the causes enumerated, the face of any State would show a marked change in the course of a few years. Moreover, such a sum would provide at least a part of the capital needed by the struggling farmer, who may now be paying exorbitant rates of interest. Then with the accumulation of capital comes a measure of independence and the evolution of the most substantial type of citizen. Land ownership is bound to increase under a prosperous agricultural régime. This means that tenancy will decrease, and tenancy, as everyone knows, is a millstone around the neck of an otherwise free and prosperous people. With the acquirement of land comes the assumption of personal responsibility, and a participation in public affairs hitherto possibly denied or not exercised because of a lack of interest. Out of this grows improved citizenship. Surely the acquisition of wealth through the replacement of careless and indifferent farm methods by skilled practice is worth while. Surely the State can not suffer from a policy of this character. In its absence, however, dire results may be anticipated, for ignorance is folly gone to seed, and when waste, the companion of ignorance, rides at the throttle, those journeying on such a train are headed for destruction. The soil is a fundamental and inexhaustible resource, out of which we shall build our towns and cities, our schools, our churches, our homes, our roads, our civilization. The neglect of its conservation is the one fatal error which any Commonwealth or any Republic can make. I am one of those who believe sincerely in the power of agricultural education to sufficiently regenerate the farm practice of this Nation and the point of view of its citizenship to place its agriculture on a stable and firm foundation.

In conclusion, I hope it has been demonstrated to your satisfaction that applied education is worth while, and will pay a handsome dividend through the development of an enlarged mental conception of fundamental facts and a proper appreciation of essential things. I hope it is clear that research is necessary and worth while, not only for its own sake, but in its application to the solution of those problems which make for the progress and elevation of the human race. It is self-evident that research must be liberally endowed in order to keep our institutions abreast of the times, and enable them to furnish the basic knowledge required to lead the vanguard of the fight against antiquated methods of farm practice now in vogue. I hope it has been made plain to you that extension teaching furnishes the motive power needed to place our agriculture on a higher plane and minimize the depression

from which it has suffered because of our failure to supply dependable assistance of the character needed at the right time. If you admit these facts, then I am safe in concluding that our experiment in education has been worth while; that Georgia has not labored in vain, but has succeeded in implanting a spirit of progress, an appreciation of research, and a belief in education in the hearts of her farmers which will enable our Commonwealth to bear her full measure of responsibility, present and future, in cosmic affairs.

Mr. BLEWETT. We are deeply interested in the last paper. One of the questions uppermost in my mind was emphasized by one or two repeated suggestions on the part of the speaker that over 46 per cent of the population were ignored in this work. I should like to ask what does Georgia purpose doing to save itself from the menace of such a percentage of its population being ignored in this way?

Mr. SOULE. I can explain that, I think, sir. You understand I represent the white institution in Georgia. There is one at Savannah for the colored youths, but it would be quite out of my province to discuss it.

Mr. BLEWETT. I simply wanted to know if there was adequate preparation for such things for the colored people.

Mr. SOULE. There is an institution at Savannah, as already pointed out. We employ a number of colored demonstration agents in our own work, a fact which I did not previously mention. There are a considerable number of colored boys' corn and girls' canning clubs. A great many colored farmers attend the meetings held for white farmers. Some landowners who have, say, a thousand acres of land bring in all their colored tenants to these meetings. You will thus see that we are doing a good deal for the colored farmers through our extension work. I would like to say that in 1870 the illiteracy among the colored people was 92.1; in 1900, 36 per cent. Now it is less than 16 per cent; so you will see that the State of Georgia is helping the colored people more than it has been credited with doing. You must also bear in mind that in the State of Georgia the colored population contributes very little to the taxable wealth of the State. The funds for the maintenance of schools for colored people are therefore provided out of the taxes paid by the white citizens. There are about 2,000 colored boys and girls in our high schools at the present time. You will thus see that provision is being made for preparing a considerable number of this class of our citizens to teach in the rural colored schools of the State. My only desire is to make plain to this assemblage just what the State of Georgia is doing for its colored citizens.

The extension work of the Georgia State College of Agriculture, as you no doubt realize, is not only being carried on through State appropriations but through Federal appropriations available to the State under the provision of the Smith-Lever Act. In so far as the work of the extension division of this institution is concerned, the colored

citizens are not being discriminated against, but, as already pointed out, their interests are being furthered in so far as practicable by permitting and encouraging their attendance at the meetings held for white farmers; by the advice given through the medium of the white men and women county agents, and more particularly through the colored men and women county agents, maintained in association with our extension division.

The CHAIRMAN. In this connection I would like to add that in the distribution of Federal funds, in apportioning the funds to the different States for agricultural purposes, provision is made that in those States in which separate schools are provided for the colored people the fund is divided and a portion of it is given separately to the schools for colored people.

Mr. TRUE. To give a concrete example of what is being done for the colored people in the South under this extension system, the number of agents employed who are actually colored people themselves is constantly increasing as we find persons who are competent to carry on the work. I was down, two or three weeks ago, in Hampton, Va., where the colored agents had their meeting. There were several hundred colored people from the different counties around there who had been under instruction of these agents and who had come there to show the things they had produced. The men and boys brought in samples of farm crops and the women samples of handiwork of various kinds which they performed. They had a large hall and a large tent in which these things were displayed. It was certainly a very creditable exhibit of crops, and of the things that were made by the women, preserved fruits and vegetables, and gowns of various kinds which they had made. That work had all been done under the same system of extension work to which President Soule referred, and largely under the direction of the colored agents.

Adjournment.

SESSION OF SUBSECTION 7 OF SECTION IV.

GEORGE WASHINGTON UNIVERSITY,
Thursday morning, December 30, 1915.

Chairman, W. C. BORDEN.

The session was called to order at 9.30 o'clock by the chairman.

The CHAIRMAN. The first paper is by Dr. Steele, senior dean of the College of Medicine, University of Illinois, Chicago, Ill. Dr. Steele is absent by reason of illness and the paper will be read by Dr. Brown.

THE DEVELOPMENT OF ENTRANCE REQUIREMENTS IN MEDICAL EDUCATION AND THE EFFECT OF THIS DEVELOPMENT ON ATTENDANCE IN MEDICAL COLLEGES OF THE UNITED STATES.

By D. A. K. STEELE,

Senior Dean and Professor of Surgery, College of Medicine, University of Illinois, Chicago.

In selecting a topic for presentation to this congress I had in mind the tremendous strides that medical education has made in demanding higher entrance requirements of the matriculant entering the medical colleges of the United States during the past few years, and particularly how the enforcement of higher requirements for admission has affected the attendance during the past two or three years at medical colleges that in addition to a four-year high school course required two years of collegiate work.

In the preparation of this paper I desire to express my appreciation of the aid rendered me in the collection of statistics by President James, of the University of Illinois, and Mr. William H. Browne, secretary of the College of Medicine, by utilizing a report on replies to a questionnaire, sent to all of the Class A medical colleges of the United States, and a compilation and analysis of the replies to this questionnaire.

I am also greatly indebted to Prof. A. C. Eycleshymer, of the same university, for very valuable assistance, by placing at my disposal historical data leading up to the subject in proper chronological order. Dr. Oliver Wendell Holmes says, "Sit at the feet of History if you would know of rarest treasures."

To understand thoroughly any subject we must go back to the beginning and trace its development carefully and analytically to appreciate its educational value.

Therefore, before considering the questions concerning the entrance requirements of to-day, let us take a retrospective glance at the early practice of medicine in this country, and the attempts to establish medical instruction in America.

When the Puritans first dreamed of a land of religious freedom they realized that the health of their colony must be guarded, and we learn that in 1620 Dr. Samuel Fuller was physician to the Pilgrims in their trip to the shores of Massachusetts, and in 1635 when Dr. John Winthrop came as governor of Connecticut, he was also a

learned chemist and physician and traveled throughout New England on horseback visiting his patients. Dr. Giles Firman, who landed in 1647, gave a course of medical reading at Harvard College. According to the historian, Greene, Dr. Firman's course of medical instruction comprised little more than informal talks about the dry bones before him, yet it seems to have had a good effect, for the general court shortly after recommended that "such as study physick or chirurgery may have the liberty to read anatomy and to anatomize once in four years some malefactor." Notwithstanding this important action by the general court, it was not until after the middle of the following century, according to Thatcher, that Dr. Bond assisted Dr. Middleton in the first dissection of a human subject made in America.

In 1674 the apostle, Elliott, said, "Our young students in physick may be trained up better than yet they be, and are forced to practice before ever they saw an anatomy made or are duly trained in making experiments. We never had but one anatomy in this country which Mr. Giles Firman (now in England) did make and read upon very well."

Shortly after the middle of the seventeenth century, in addition to the dissection made by Drs. Bond and Middleton, further medical progress was made, according to Packard, by the inauguration of a course of formal lectures on anatomy by Dr. William Hunter (a pupil of the elder Monro) at Newport, R. I., in 1754-1756.

One of the earliest publications in America was a treatise on pleurisy, by Dr. Tennant.

In 1765 the medical department of the University of Pennsylvania was founded, and in the same year New Jersey had the honor of organizing the first State medical society in the colonies, and two years later, in 1767, the College of Physicians and Surgeons was founded as the department of medicine of Kings College (Columbia University, New York).

Prior to the founding of these medical colleges, the training of physicians was largely under the supervision of individual practitioners, since there were as yet neither medical schools nor hospitals. The student became apprenticed to some colonial practitioner, with whom he lived, and gave all his time to study or work for from three to seven years. He made daily calls with his preceptor, who would quiz him upon the work of the day. He also would do the chores about the house and barn, spread plasters, mix ointment, make pills, gather herbs, and collect animal excreta, etc. In this way the country was supplied with doctors, as England was opposed to establishing professional schools in the colonies.

When the term of apprenticeship ended, the practitioner appeared before some court and under oath declared his apprentice proficient, and the court granted him a license as an authorized practitioner and "doctor."

Some of the more ambitious and well-to-do apprentices went to England, where they saw the latest and best in medical training and practice, and most of them complied with the requirements which enabled them to affix M. D. to their names. When these young men returned they brought new ideas with them, which soon resulted in the organization of medical schools, and it is interesting to note that Dr. William Shippen, of Philadelphia, after spending five years in study abroad, returned to Philadelphia and gave a course of lectures on midwifery, and the following autumn announced a series of anatomical lectures "for the advantage of young gentlemen engaged in the study of physick in this and the neighboring Provinces whose circumstances will not admit of their going abroad for improvement in the anatomical schools of Europe, and also for the entertainment of any gentlemen who may have the curiosity to understand the anatomy of the human frame."

Through the efforts of Shippen and his friend, John Morgan, the College of Philadelphia was persuaded to create a chair of the theory and practice of medicine, to which Morgan was called while Shippen soon afterwards occupied the newly created chair of anatomy and surgery. Kühn was made professor of *materia medica*, and

Benjamin Rush professor of chemistry. Thomas Bond was added to the organization as clinical instructor in the Pennsylvania Hospital. We are struck by the foresight and acumen of the founders of the first medical school in America in establishing in the year 1765 a medical school that possessed the essential requirements of all good schools, a combination of didactic and clinical teaching, directly connected with a public hospital and controlled by a university.

Entrance requirements soon became a matter of so much importance that on May 12, 1787, an action was taken by the trustees of the college, stating, "that such students as have not taken a degree in any college, shall, before admission to a degree in physick, satisfy the trustees and professors of the college concerning their knowledge in the Latin tongue and in such branches of mathematics, natural and experimental philosophy, as shall be judged requisite to medical education."

In 1782 a medical department of Harvard College was opened at Cambridge through the activities of Dr. Joseph Warren, of Boston, of Revolutionary fame.

In 1791 the State of New York authorized the regents of the university to establish a college of physicians and surgeons within the State.

In 1798, a medical college was organized by Dr. Nathan Smith at Dartmouth College, so that at the beginning of the nineteenth century, four medical colleges had been organized in this country, one in Philadelphia, one in New York, one in Boston, and one in Hanover, N. H., and it is interesting to note that while each was organized independently by the efforts of progressive and ambitious physicians and surgeons, they all later became departments of universities.

From the establishment of these medical schools at the end of the Revolution in 1782, until the end of the Civil War in 1865, the number of reputable medical colleges had increased to 42 recognized schools, but the entrance requirements had not advanced beyond a common school education, except in a few instances where high school certificates were required to gain admission.

A lengthening of the term and a knowledge of Latin and Natural Philosophy was demanded by a conference of Medical Schools held at Northampton, Mass., in 1826, before medical students were eligible to matriculate. The rapid development of the country and the demand for doctors during the middle of the nineteenth century resulted in the establishment of private medical colleges and the lowering of entrance requirements, and the commercializing of medical education in this country and led to the severance of a considerable number of medical colleges from university connection. This deplorable reactionary condition however, could not be permitted to continue, and largely through the influence of Dr. N. S. Davis, founder of the American Medical Association, who in 1845 pointed out the fact that no fixed standard of preliminary medical education or entrance requirements existed either in theory or practice among the medical schools, a change was brought about.

Through his efforts the American Medical Association in 1847 adopted the following resolution: "That the convention earnestly recommends to the members of the medical profession throughout the United States to satisfy themselves either by personal inquiry or by written certificates of competent persons before receiving young men into their offices as students, that they are of good moral character and that they have acquired a good English education, a knowledge of natural philosophy and the elementary mathematical sciences including geometry and algebra and such an acquaintance at least with the Latin and Greek languages as will enable them to appreciate the technical language of medicine and read and write prescriptions." For many succeeding years, this action was reaffirmed by the association.

The persistent demand for a higher standard of medical education and a more systematic arrangement of studies in the medical colleges at each annual meeting of the American Medical Association finally resulted in the holding of a convention of delegates from a large majority of medical colleges in the United States at Cincinnati, Ohio, in 1867. After three days' discussion the convention adopted resolutions de-

claring that a fair preliminary education equal to a full academic or high school course ought to be required of all students before they are permitted to enter upon the study of medicine, and that the time of medical study should be four years including at least three consecutive annual courses of graded medical instruction of not less than six months each with hospital clinical instruction during the last college year.

The American Medical Association has persistently continued its struggle for higher entrance requirements, and the splendid efforts of Dr. N. S. Davis have been continued by the committee on medical education of the association under the efficient leadership of Dr. Arthur D. Bevan, its chairman since 1904, in waging persistent and active warfare against low-grade medical schools and in favor of higher entrance requirements.

In 1910, the Flexner report on American medical schools came as a tremendous reinforcement for all the forces engaged in the uplifting and upbuilding of medical colleges. The action of the State licensing boards and the development of reciprocity between the various States regarding the right to practice medicine, also has had a wholesome influence. All these agencies have brought about marked improvement in medical curricula and the establishment of higher entrance requirements.

The Chicago Medical College, now the medical department of the Northwestern University, under the inspiration of Dr. N. S. Davis, its dean, initiated a three-year graded medical course in 1859 and has never receded from these requirements but has steadily kept pace as a leader of higher entrance requirements, notwithstanding the fact of strong opposition on the part of many influential medical teachers. For example, in 1871, Prof. Henry J. Bigelow, of Harvard Medical College, expressed this opposition in the following words: "It is safe to say that no successful school has thought proper to risk large existing classes and large receipts in attempting a more thorough education."

The officers of Rush Medical College at this time and for many years afterwards, held the same views as were expressed by the Harvard professor. Harvard, however in 1901, under President Eliot made the requirement for admission to the medical college, a college degree, from which position it has, however, since receded. In 1893 the medical department of Johns Hopkins University was organized with the requirement of a college degree for admission and has never changed this requirement. Her graduates are recognized rather as trained scientists, medical research workers, and professional teachers than as medical practitioners. However, I believe that at the present time, there is a very general feeling that within a comparatively short time, the great majority of medical colleges will require not less than two full years of college work superimposed upon a complete four-year high-school course of training, and that the constantly increasing cost of medical education and the demands of State boards of health for better qualified medical men will result in the elimination of the private medical schools which have filled an important place in the evolution of medical education in the United States.

This brings me now to the discussion of "How the enforcement of higher entrance requirements for admission has affected attendance on medical colleges in the United States."

College.	Requirements: College work in addition to 15 units high school.	Conditions.	Attendance in freshman class.				
			1	2	3	4	5
			Year preceding present requirements.	Year of requirements.	Per cent loss.	Attendance present year.	Per cent gain.
Atlanta Medical College.....	1 year college work, prescribed subjects not mentioned, 1914-15.	No conditions allowed.....	77	31	60	31	.....
University of Alabama School of Medicine.	1 year, 1914-15; 2 years, 1915-16.	do.....	37	9	76	9	.....
Bowdoin College of Medicine of Maine.	1 year, 1911; 2 years, 1916.	do.....	35	14	60	26	85½
Boston University School of Medicine.....	1 year, 1914.....	Conditions in biology (laboratory work) allowed.	47	14	70	14	.....
Bellevue Hospital Medical College.....	1 year, 1912, including chemistry, physics, biology, and modern language.	Conditions allowed by American Medical Association regulations. ¹	206	54	73	160	177
University of Buffalo, Medical Department.	1 year, September, 1914.....	do. ¹	92	30	67	30	.....
College of Physicians and Surgeons, Baltimore.	1 year, 1914, including chemistry, physics, biology, and modern language.	do. ¹	30	13	64	13	.....
University of California, Medical Department.	2 years, 1906.....	No conditions allowed.....	31	6	74	43	437
Cornell University Medical College.....	College degree required, 1908.	do.....	(¹) 34	(¹) 11	70	55	.....
University of Colorado, Medical Department.	2 years, 1910, without subjects prescribed; in 1911 certain subjects were required not named in answer.	6 college hours in any subject except chemistry.	.....	.....	.....	15	36
Columbian University College of Physicians and Surgeons.	1 year, 1900-4; 2 years, 1910-11.....	No conditions in prerequisites; answer does not state as to conditions allowed in other subjects.	93	81	13	137	70
University of Cincinnati, Medical Department.	1 year, 1910-11; 2 years, 1912-14.....	Conditions allowed either secondary or collegiate if not of local import.	17	19	.....	20	5½
University of North Dakota School of Medicine.	2 years, 1907.....	Conditions in 1 unit high school work and same proportion of required pre-medical college work is allowed; student not fresh in college.	(¹)	5	.....	9	80
Johns Hopkins University, Medical Department.	College degree, 1903; including chemistry, physics, biology, and German or French. These requirements were increased in 1914 by extra work in chemistry being demanded.	Conditions in laboratory, physics and language may be allowed.	(¹)	19	.....	90	370
Dartmouth Medical School.....	2 years, 1910.....	Conditions occasionally allowed in a college subject.	23	13	43	14	7½

: Loss.

: Gain.

College.	Requirements: College work in addition to 15 units high school.	Conditions.	Attendance in freshman class.				
			1	2	3	4	5
			Year preceding present requirements.	Year of requirements.	Per cent loss.	Attendance present year.	Per cent gain.
Detroit College of Medicine and Surgery...	1 year, 1914.....	Conditions allowed in 1 year physics or biology.	90	16	82	16	.....
Howard University School of Medicine...	1 year, 1910; 2 years, 1914.....	To college graduates, 1 subject, either physics, chemistry, or biology not to exceed 3 units.	21	31	148	31	48
Hahnemann College and Hospital, Philadelphia.	1 year, including chemistry, physics, German, and biology, 1914.....	No conditions allowed.	37	8	80	8	.....
University of Iowa College of Medicine...	1 year, 1909; 2 years, 1910.....	9 college hours in any subject except physics, biology, and chemistry.	33	23	30	62	170
University of Iowa, Homeopathic.	1 year, 1913; 2 years, 1914.....	No conditions allowed.	9	2	77½	6	180
University of Illinois College of Medicine...	1 year, 1909; 2 years, 1910.....	Conditions to extent of 8 college hours, except in chemistry.	61	12	80	12	.....
University of Indiana College of Medicine.	1 year, 1909; 2 years, 1910.....	Conditions allowed in 7½ semester hours, subjects not prescribed.	67	26	61	49	89½
Jefferson Medical College.....	1 year, 1914-15, including physiology, chemistry, biology, and German.	No conditions allowed.	134	88	34½	88	.....
University of Kansas School of Medicine...	1 year, 1906; 2 years, 1909.....	Conditions allowed to extent of as many hours as can be completed in summer school the following year.	33	14	57½	56	300
Long Island College Hospital.....	1 year, 1914-15.....	Conditions allowed by American Medical Association regulations.	97	20	70½	20	.....
University of Louisville, Medical Department.	1 year, January, 1914.....	do.	96	4	96½	4	.....
University of Minnesota Medical School...	1 year, 1902; 2 years, 1907.....	Conditions allowed to extent of 6 college hours in various subjects.	52	45	13½	75	66
University of Mississippi College of Medicine.	1 year, 1914.....	Conditions allowed by American Medical Association regulations.	18	26	.....	26	.....
University of Michigan College of Medicine.	1 year, 1901; 2 years, 1910.....	Conditions allowed to extent of 8 hours college subjects, except in biology.	144	48	66½	100	108½
University of Maryland School of Medicine.	1 year, January, 1914.....	Conditions allowed by American Medical Association regulations.	98	32	67½	32	.....
University of Missouri School of Medicine.	1 year, 1906; 2 years, 1910.....	do.	20	20	.....	32	60
Medico-Chirurgical College of Philadelphia.	1 year, September, 1914.....	No conditions allowed for entrance to 4-year medical course; in 3-year pre-medical, conditions in secondary work to extent of 2 units or 8 counts.	106	30	71½	46	80

College.	Requirements: College work in addition to 15 units high school.	Conditions.	Attendance in freshman class.				
			1 Year preceding present requirements.	2 Year of requirements.	3 Per cent loss.	4 Attendance present year.	5 Per cent gain.
Washington University Medical School (St. Louis)	1 year, 1910; 2 years, 1912.....	Conditions in college German only.....	23	5	73½	14	180
Wake Forest Medical College, North Carolina.	2 years, 1910.....	No conditions allowed, except in rare cases.	12	14	16½	14	.....
Western Reserve University Medical College.	3 years, 1901; never had 1 or 2 years.....	Conditions allowed, 4 hours physics or 4 hours modern language.	45	12	73½	52	333
University of Wisconsin, Medical Department.	2 years, 1907.....	Conditions allowed with reference to requirements for B. S. rather than with reference to requirements for medical course.	(*)	26	.....	55	111½
Women's Medical College of Philadelphia.	1 year, 1914; 2 years, 1915, including physiology, biology, chemistry, German or French.	No conditions allowed.....	26	7	73	7	.....
Yale University, Medical Department.....	2 years, 1909; including chemistry, biology, and physics.	No conditions allowed, except rare cases.	53	15	74	19	26

* The rules of the American Medical Association allow conditions amounting to not more than one-half of the college requirements in physics or one-half the college requirements in a modern language in a 1-year college requirement, and all of the college requirements in physics or all of the college requirements in a modern language in a two-year college requirement.

† No students.

In column marked "g," the per cent of gain relates to the increase between the attendance of the present year and that of the year the present requirements were first enforced.

From President James's analysis of this report we learn that when the attendance at a college of medicine is approximately constant from year to year, it is evident that any increase in the requirements for admission to that college is likely to result in a substantial decrease in the number of those who will be able to matriculate in the year immediately following the change.

During the last 10 years 78 medical colleges in the United States have so raised their entrance standards as to require one or more years of collegiate work in addition to a standard 4 years' high-school education. As we have previously stated, the improvement has been due in a large measure to the activity of the American Medical Association, which, through its council on medical education, appointed in 1904, has labored unceasingly in an effort to elevate medical education in this country and it has succeeded. Since 1904 the number of medical colleges has been reduced chiefly by the elimination of those of low grade from 160 to about 100. Of these 82 now require for admission the completion of one or more years of college work. Of the 82, 37 have fixed 2 years or more of college work as a prerequisite for admission.

The adoption of a higher standard resulted in the case of nearly every college in a very considerable loss in attendance. Reports from 54 of these colleges indicate that 49 suffered a loss in the matriculation of freshmen students ranging from 3 to 96 per cent upon the adoption of their present requirements. The average loss of the 49 colleges was over 60 per cent. Of the other 5 colleges from which information is available 4 showed a slight gain and 1 experienced no change when the present requirements were adopted. It should be noted, however, that of the 4 just mentioned, 2 suffered a loss of 66 and 71 per cent, respectively, in the number of matriculations immediately following the first advance in the entrance requirements.

Among the most noteworthy losses experienced upon the adoption of the present requirements for admission are the following: In the University of Alabama School of Medicine the number enrolled in the freshmen class fell from 37 to 9 upon the adoption of a year of collegiate work as a prerequisite in 1914, a loss of approximately 75 per cent. In the College of Physicians and Surgeons of Baltimore the number fell similarly from 36 to 13, a loss of 64 per cent. Other decreases of the same kind were those of the University of California Medical Department from 31 to 8, a 74 per cent loss; Cornell University Medical College from 105 to 10, a 90 per cent loss; University of Colorado Medical Department from 34 to 11, a 70 per cent loss; Georgetown University Medical Department from 56 to 13, a 70 per cent loss; Hahnemann College and Hospital of Philadelphia from 37 to 8, an 80 per cent loss; University of Kansas from 33 to 14, 50 per cent loss; University of Louisville Medical Department from 95 to 4, 96 per cent; University of Michigan College of Medicine from 144 to 48, 67 per cent; Ohio State University College of Medicine 114 to 41, 64 per cent; Syracuse University College of Medicine from 42 to 13, 69 per cent. Washington University Medical School of St. Louis, from 23 to 5, 79 per cent; Women's Medical College of Philadelphia, from 26 to 7, 78 per cent; Yale University Medical Department, from 58 to 15, 74 per cent.

The College of Medicine of the University of Illinois established as its entrance requirements for 1913-14 the completion of 15 units of secondary work and 1 year of work in a recognized college or university. The requirements for 1915 included an additional year of college work. In common with other medical schools which have recently advanced their requirements for admission the College of Medicine of the University of Illinois experienced in consequence the expected decrease in the number of matriculants from 125 to 61 in 1913, and from 61 to 12 in 1914, and increased from 12 in 1914 to 47 in 1915, a gain of about 300 per cent. In this connection it may be of interest to state that 21 applicants for admission in 1914 were rejected, who, with a little more preparation and the passing of a few not difficult examinations, might have qualified for admission. Of these 21 candidates for admission, 3 held collegiate credits from institutions not recognized; the secondary credits offered by 3 persons were

adjudged insufficient; 1 candidate was unable to secure a letter of honorable dismissal; the college credits offered by 1 person consisted only of the work for the degree of D. D. S; three had deficiencies in certain prescribed subjects, although having a sufficient total number of hours of college credit; and 10 candidates would have required to be allowed a larger number of conditions than the regulations of the college permit.

In the institutions already referred to the attendance has in nearly every instance again become normal, after a reasonable time, and such institutions showed gains in matriculation in 1914 over that of the year in which the present requirements first went into effect ranging from 8 to 475 per cent. Some of the more noteworthy of these instances of recuperation are: The Bellevue Hospital Medical College, a gain of 177 per cent; University of California Medical Department, 437 per cent; Johns Hopkins University Medical Department, 370 per cent; University of Iowa College of Medicine, 170 per cent; University of Kansas School of Medicine, 300 per cent; University of Michigan College of Medicine, 108 per cent; Syracuse University College of Medicine, 130 per cent; University of Vermont College of Medicine, 148 per cent; University of Utah College of Medicine, 475 per cent; Washington University Medical School, St. Louis, 180 per cent; Western Reserve Medical College, 333 per cent. These percentages seem large but that, of course, is because the bases were freshmen enrollments, which under the new conditions were small.

A backward glance at the growth of entrance requirements in medical education and the effect of this growth upon the attendance of medical students in the United States convinces me that with all its vicissitudes and discouragements, the disappointments have been only temporary, and the results have been exceedingly encouraging, inasmuch as they have caused the elimination of between 50 and 60 low-grade medical schools that had outlived their usefulness, and the trend of events point to the still further elimination of undesirable medical schools and a readjustment of high-grade medical colleges as an integral part of a university with abundant clinical facilities and an opportunity for more medical research, investigations into the problems of prophylaxis, of etiology and pathology, where we may combine the making of doctors with the instinct for research, the evolution of science, and the development of an intellect that will solve the problems of medicine and surgery, in lessening disease, prolonging life, and giving better service to the citizens of our Commonwealth.

The CHAIRMAN. Owing to Dr. Steele's absence there will be no discussion of the paper.

The next paper in order is by Dr. F. C. Waite of the Western Reserve University. His paper is entitled "The biological knowledge and training needed by the beginning medical student."

THE BIOLOGICAL KNOWLEDGE AND TRAINING NEEDED BY THE BEGINNING MEDICAL STUDENT.

By FREDERICK C. WAITE,

Professor of Histology and Embryology School of Medicine, Western Reserve University, Cleveland, Ohio.

The study of medicine is not in the realm of elementary education. It demands a good preliminary education of the student who would master it. Such preliminary training is of two sorts, general and special. The general part must encompass those subjects that are expected of any fairly educated man, including the fundamentals of

the structure, vocabulary, and literature of his native language; the essentials of mathematics; some knowledge of the world, political, social, economic and religious, both today and in the past as encompassed by geography, civics, and history. These, in a broad sense and with greater or less limitations and variations, furnish the subject matter of the primary and secondary school systems in all countries. Whatever may be the life work of a man, it is conceded that he needs this general knowledge. The individual who prepares to enter any profession must acquire, in addition to this general knowledge, more special knowledge in lines that lead toward the subject matter of his profession.

The subject matter with which the medical profession deals is the human body in its varied relations. This living organism is a complex of structures, activities, and reactions which fall largely within the confines of the sciences of biology, chemistry, physics, and psychology. The study of medicine is chiefly a consideration of the facts and laws of these sciences and of their interrelations and applications to the human organism.

It is obvious that one can not intelligently deal with the applications of these sciences unless he has a fair knowledge of the salient facts of the sciences themselves. Therefore the special preliminary preparation that the prospective medical student must have lies largely within the realm of these four sciences.

The advance of knowledge in the field of medicine is the common property of all civilized nations. If the student is to benefit by this continuing accretion of knowledge, he must have command of the vehicles through which such knowledge is imparted; that is, he must have some command of modern languages. It is the language rather than the literature of these languages that will be of the greatest value to him.

The necessity of a knowledge of these elementary sciences has always been recognized in medical education. The historical sequence in which these have been given a part in the teaching of medicine has been first chemistry, then physics, then biology, and latterly psychology. Although the importance of a knowledge of the elements of psychology in the preparation for the study of medicine has not yet been thoroughly and concretely recognized, there can be no doubt that it must come.

To raise the question as to which of these several fields of science, preparatory to the study of medicine, is the most important would only engender controversy; but we may certainly be permitted to postulate that, in order that the student may be able to deal with the subjects of the medical curriculum with intelligence and comprehension, some definite pedagogical treatment of biology is essential. The mere fact that a student is a lover of nature or is interested in biological phenomena is not enough.

There has been much discussion in the last score of years in the United States on two questions: First, as to how much educational training is essential before the student may properly enter upon a medical course, and, second, as to the content of this training. There have been and are many men of many minds in this discussion. The discussion has been of immense value, not only to the medical schools and medical educators, but to the general public as well, and each year brings a clearer exposition of the fundamental principles involved.

Out of all this discussion has come the general conclusion that the completion of the course of primary and secondary education as given in this country is not sufficient preparation for the average student who is to accomplish the medical curriculum in a course of four years. The standard primary and secondary public education in the United States consists of 12 years' work, 8 of these in the elementary schools and 4 in the high school. In some parts of the country the local standard is less, being 11 or even 10 years. Also in certain private schools concentration serves to shorten somewhat the 12-year period.

While there is now fairly general agreement among those engaged in medical education that the completion of the high-school course, with its 14 or 15 units of secondary work is not enough to serve as adequate preparation for the study of medicine, there is some difference of opinion as to whether the training intervening between the high-school course and the medical course should be undertaken by the medical school itself and prefixed to the medical course, or whether it should be accomplished by the colleges of arts and science, be they independent institutions or departments of universities. A minority of medical educators in the United States believe in prefixing a year of work to the medical course, making a five-year course following completion of the high-school course, but the majority believe that a better result will come if the college of arts and science gives whatever work is to be done by the student between the high school and the medical school course. The chief argument for this position is that the student needs to study these several sciences for their own sake, and to defer their application to medicine until after he has fully comprehended the fundamentals of the sciences themselves. If the medical school gives this work, the tendency is to attempt to apply the sciences from the start and thereby lose that great value of the study of these sciences which comes from their consideration as pure science.

While it is generally conceded that some education in addition to that given by the high school should be acquired before the student enters the medical course, there is a variety of opinion as to whether there should intervene one, two or three years of study. Depending upon the opinion one holds on this question will differ his opinion as to how much study should be put upon each of the sciences mentioned. If the time be one year, the student can do little more than get elementary courses in chemistry, biology and physics, with perhaps a little modern language. If the time be two years, he can extend his study on the sciences—or, at any rate, on the two more important ones, biology and chemistry—and enlarge somewhat upon his general education. If the time be three years, he can yet further extend the lines indicated and get some knowledge of the humanities and certain sciences, like sociology and economics, which are accessory to medicine.

For want of a better nomenclature the medical schools and the educational associations are accustomed to express the amount of work in these specifically required preliminary subjects in terms of years, courses, total hours or semester hours, with usually a further restriction that at least a certain proportion shall be personal work by the student in the laboratory. Everyone is fully aware that these numerical expressions are unsatisfactory, and that the number of hours which a student devotes to a subject is only one of several factors that determine the kind and amount of knowledge and training that the student will acquire. The innate ability of the student, his industry, the capability and interest of the instructor, and the equipment and facilities of the laboratory are factors, each of which is equally if not more important than the amount of time. But the amount of time is capable of numerical expression and the others are not; hence we speak of a student's preparation in terms of semester hours, although it gives a very inaccurate notion of his real ability in that subject.

With the premise that training in biology is essential as a preparation to the study of medicine, the question arises as to how much and what kind of training is most serviceable. The conditions under which a subject is taught have a great influence on its value as preparation for professional study. Biology is taught under two widely divergent conditions, namely, in secondary schools on the one hand and in colleges and universities on the other. Following a personal experience in teaching this subject in both secondary schools and in universities, the speaker is thoroughly convinced that biology taught in secondary schools can be considered of only minor value as a preparation for the study of medicine, and in no case can such work by the student be considered equivalent to collegiate work. Usually the course comes in one of the first two years of the secondary school course. The youth is then but 14 or 15 years of

age and of a mental immaturity such that he attacks the subject purely by a process of memorizing. The teaching equipment in the average secondary school is far inferior to that in the average college, and the training of the teachers is also usually less complete. As a part of a general education, secondary school biology has large value, but as a part of the technical preparation for the study of medicine it is entirely inadequate. Hence what follows refers only to biology taught in colleges and universities.

The term "biology" encompasses a variety of subdivisions, but for our purpose we may divide it into two, namely, morphology and physiology, and these again are divisible into plant morphology, animal morphology, plant physiology, and animal physiology. The question presents itself whether the field of each of these four subdivisions is of equal value in preparing the student for the study of medicine. The studies of the medical curriculum are chiefly concerned with animals. To be sure, pharmacognosy and bacteriology lie within the realm of the plant world, but primarily the medical student will deal with animals, and therefore it seems that his preparation had better be concerned largely with animals. Again, the logical order emphasizes a knowledge of structure in advance of a knowledge of function. The interrelation and correlation between structure and function is intimate, but to the speaker it seems that animal morphology is rather the better vehicle for imparting to the student that knowledge along biological lines that he needs for the study of medicine, and that it should be emphasized over the physiological phase.

The subject of biology as a preparation for medicine affords to the student a means of gaining certain essentials. One of these is the acquisition of a certain body of facts which he will need to know when he takes up certain subjects of the medical curriculum. This knowledge of facts is largely a matter of memory and is of far less importance than the training that the study of biology gives. This training of the ability to appreciate certain features is, in some of its phases, common to other sciences, but in certain lines it is restricted to biology. Of the abilities which biological training fosters I would especially cite the following:

First. The power of accurate observation, the recording of such observation, and the mental processes of deduction from this observation.

Second. The consideration of the correlation of structure and function.

Third. A point of view which considers a living organism as a continuing series of phenomena rather than as a single spectacle. This involves the ability to mentally bridge gaps between observed facts.

Fourth. An ability to compare organisms and organs that, while similar, are yet enough divergent to permit of a conception of contrasting differences and paralleling similarities.

Fifth. A sense of philosophical consideration of biological phenomena, especially in connection with the ancestral relationships of the various sorts of organisms.

It is along these lines that there lies the great value of biological study as a preparation for medicine. Medicine demands of its devotees the ability to observe, to deduce, to compare and contrast, to correlate structure and function, and by logical reasoning to reach correct conclusions, and the biological sciences when correctly handled present the best medium of training the student toward these qualifications.

The preparation in biology which we find in students entering medical school is tremendously variable, and it often appears as if the colleges are inadequately advised as to what is most useful as preparation. I believe the most common and worst mistake is found where students preparing for medicine are led to take courses which are duplicates in miniature of the courses in the medical school, such as human osteology, human anatomy, both gross and microscopical, and human physiology. This practice is fundamentally wrong. The chief evil incident to this procedure is that a student who has had a course in a subject which belongs to the medical curriculum expects to be relieved from taking the regular course in this subject when he enters the medical school. Out of loyalty to his former college and his former teacher

he believes the course he has had is as good as that given in the medical school. If he is refused credit for the course he has taken, he resents the implication that the course was not a good one and is at once placed in a frame of mind toward the course he must repeat that is far from healthful. Both because of this resentment and because he believes he knows all about the subject, a student who repeats such a course usually is less earnest in his effort. Also the subject matter of the course is not new and does not awaken that interest, because of the presentation of new facts, that is awakened in the student who is first introduced to the subject. The total result is always unsatisfactory. If, on the other hand, as often happens for one reason or another, the student does get credit and is relieved from taking the course in the medical school, he usually is less well grounded in the subject matter than his classmates, since the regular courses in the medical school are usually more extensive and more carefully correlated and taught than the courses in medical subjects given in the college of arts and science. At any rate, the student who receives credit has not the subject fresh in mind, and he loses the correlation with other subjects which is gained by the parallel study of the several subjects.

There is thus a great embarrassment to the teachers in the medical school coming from the attempt in the college of arts and science to duplicate some of the courses of the medical curriculum. In years gone by this procedure shortened a student's medical course by a year. It can not do this now. I wish to plead with teachers in colleges of arts and sciences not to give duplicate medical courses to their students who are to enter medical schools. The time and opportunity of the student who is planning for medical study should be used in taking courses in fields of endeavor which are not offered in the medical curriculum. He thus enlarges his point of view and better prepares himself for the work that comes in the medical school.

No one would wish to say that a prospective medical student should not study anatomy. He should, but that anatomy should be comparative, not human. There is a tremendous field in both invertebrate and vertebrate anatomy where the student can become grounded in the principles of anatomy, and upon this foundation he can build firmly his knowledge of human anatomy when he comes to the medical school. Nor is microscopical anatomy interdicted, but let the course be comparative, or at least introductory, rather than an attempt to duplicate the medical course.

It has been said that the center of the medical course is the human body and its activities in normal and abnormal conditions. It is a truism to say that the normal must be thoroughly mastered before the abnormal is considered.

That organism with which the medical student and practitioner must deal is analyzable into its component parts, the organs, and these into their tissues, and these into the cells. The activities of the entire organism are the resultant of the activities of all its cells. The cell is the structural and functional unit of this organism, and it seems apparent that the foundation of all medical study is a firm understanding of the cellular structure and function. Yet those who prepare students for medical study seem to lose sight of this primary precept. It seems unnecessary to offer arguments why students should be fully familiar with the fundamental facts and principles of cytology, but the sad truth is apparent that not one student in ten that enters our medical schools has more than a hazy notion of the morphology and physiology of animal cells. It is the speaker's opinion that, next to a knowledge of the general biological principles, the most essential phase of biology, as a preparation for medicine, is an adequate instruction in the knowledge of the structure and function of the cell. Next to this, in importance, is comparative anatomy, either vertebrate or invertebrate. The vertebrate aspect will be more helpful, since the facts there learned will have direct application in the study of human anatomy, but the principles of observation, comparison, and logical reasoning, and biological deductions can be acquired in the study of invertebrates nearly as well. Many facts in invertebrate zoology, such as those regarding insects, parasitic protozoa, parasitic worms, relation of host and parasite, etc., are of

very direct application in medicine. No student is fully prepared in biology for medicine until he has studied some of the invertebrate parasites, and on the basis of this observational knowledge has fully considered and appreciated the principles of parasitism and alternation of generations.

The general principles of biological structure and function can be gained in properly selected study in the field of either zoology or botany, or probably better in a wise choice from both fields. These underlying principles are essential to an appreciation of the natural history of man, and are presented to the student as a corollary of the detailed and comparative study of individual animal and plant forms. The medical student certainly should know the broad facts and theories concerning man and his relation to his biological environment.

One hesitates to say how much time is necessary to give a student adequate biological knowledge to enter the medical course with a fair prospect of understanding the matter presented to him in the medical course. As already stated, time is only one of the factors in the biological training. What the student must have is knowledge and training, irrespective of the time factor. The study of biology is something that requires lapse of time to assimilate. The field is new and very different from the humanities and other sciences. The student mind requires time to digest the new facts and the new application of facts already known. He must acquire a new habit of observation. He must learn not only to look but to accompany his visual impression with mental comparisons and reflections, in a word, to see—in the best sense of the word—the things that are serving as vehicles to carry to his deeper mind the principles of structure and function of living things; and having seen he must correlate and coordinate and acquire a habit of sequential thought.

I believe that the study of biological subjects in college should extend over at least two collegiate years, and during this time the student should devote at least one-fifth of his effort to biology, for in no less time can he acquire the knowledge and abilities that have been outlined. It is quite obvious that the one year of college preparation now in vogue as a minimum is not sufficient to give a student adequate preparation for the medical course, and, moreover, that it is pedagogically entirely improper to introduce a student to three new sciences in one year. This is so thoroughly appreciated now in the United States that the medical schools are rapidly coming to require at least two years of collegiate preparation, and we may be sure that within a decade this will be the minimum standard, if, indeed, we can not say it already is.

To summarize, the speaker believes that every student who enters an adequately equipped and adequately manned medical school, with the expectation of gaining an understanding of the medical sciences and of the principles and practice of medicine in the broad sense, and with a hope of maintaining in the future his place in his profession, in addition to preparation in other sciences, should study biology and chiefly zoology for at least two years in the college of arts and sciences. He should not take any courses which are duplicates or miniatures of the courses he is to get in the medical school. He should have when he has completed his biological study, knowledge and ability as indicated under the following heads:

- (1) He should understand the broad biological principles, and theories, and laws, especially those that bear upon the relation of man to his ancestry and biological environment.
- (2) He should have a detailed knowledge of the morphology and physiology of the generalized animal cell supplemented by intimate knowledge of some specialized cell types.
- (3) He should be thoroughly grounded in the observation and comparison of the structure of several forms of either vertebrate or invertebrate—preferably vertebrate—animals.

(4) He should understand the principles of parasitism, relation of host and parasite, and alternation of generations, as illustrated by the study of parasitic insects and worms.

(5) He should have the power of accurate biological observation and the ability to record these observations; he should be able to compare, contrast, and correlate, biological facts, and draw correct deductions from these facts; and he should be able to carry a sequential line of thought through a series of observed facts.

With such a basis the medical school can, in its earlier years, adequately prepare the student in the knowledge of the normal structure and function of the human body, so that he may enter upon his study of the abnormal with both knowledge and ability to observe, compare, correlate, and make logical deductions. We may then hope that the product of the medical school will both grace and advance the profession.

The medical school is blamed for many a mediocre product when in fact the case was nearly hopeless when the student entered upon the medical curriculum. If the professional school is to do its duty to the public through its graduates, it must have the intelligent cooperation of those institutions that prepare the student to begin the study of medicine. The medical school is only a part of the educational system, and can not accomplish the entire task.

There has been great advance in the United States in the last two decades in the quality of the training given by the medical schools, but this advance can be continued only if the preparation for medicine is carefully planned as to content as well as to time, and such planning can bear most fruit in the field of the biological sciences in the college of arts and sciences.

The CHAIRMAN. The following paper will be read by title at this session: "Who is a medical practitioner?" by Harlan Hoyt Horner.

WHO IS A MEDICAL PRACTITIONER?

By HARLAN HOYT HORNER,

Director of the Examinations and Inspections Division of the University of the State of New York, Albany.

A layman who ventures in this highly "antitoxic" age to inquire who is a worthy disciple of Hippocrates may be bent upon a task quite as fruitless as that of Diogenes in his search with a lantern by daylight for an ideal man. He must at once confront the fact that disease is much older than medicine. Hippocrates taught the doctrine of "critical days" some 400 years before Christ. Prof. Osborn,¹ of the American Museum of Natural History, has told us recently that men and women with faculties like our own were living in the region now known as southern France and northern Spain at least 25,000 years ago. Man, the dominant power of the earth, has not, Prof. Osborn would have us believe, materially changed in his physical make-up in all that time. There were "critical days" in the lives of men many hundreds of years before the father of medicine came upon the scene. Blood circulated in the human body long ages before Harvey² announced that astounding fact to a credulous world, barely 300 years ago. In all these 25,000 years that man has walked the earth in his present physical form, there has doubtless not been a time when the discovery of yesterday, the discovery of this morning, in some laboratory at Baltimore or Berlin or Vienna would not have been a blessing to him. Galen, Harvey, Lister, Pasteur, Virchow, had they lived in that ancient time, would have found a work to do.

¹ Men of the old stone age; their environment, life, and art.—Osborn.

² *Exercitatio anatomica, de motu cordis et sanguinis in animalibus.*—Harvey.

One who reflects upon how far human ailments antedate the science of medicine is struck also by the singular fact that the universality of disease is not recognized by the varying restrictions which society places about the training and the service of him who would practice the healing art. Disease once lodged in the human body, while it may vary in its intensity in this climate or that and wreak more havoc upon one constitution than another, really knows no race, no boundary line, and no little "pathy" of medicine.¹ Blood circulates in the veins of the walrus hunter in Alaska and in the veins of the banana picker in Nicaragua according to the same general laws, even if not with the same rate of acceleration. Physicians tell us that intermittent malarial fever, whether it be contracted in the Dardanelles or on the Hudson River, along the Nile, or far up the "River of Doubt," is characterized by cycles of chills, fever, and sweating. The bacillus typhosus, wherever it fastens itself upon the human body, follows well-known cycles from week to week in thousands of cases with readily recognizable similarity. The diplococcus pneumoniae lodged in the breast of a cod fisherman of Labrador gives Dr. Grenfell the same concern that the King's physician would have to-morrow morning if the master of Buckingham Palace were suddenly stricken with that malady. The diagnosis and the treatment in each case would doubtless be the same. The bacillus tuberculosis takes its awful toll in much the same fashion in Florida and in Arkansas as in the Argentine Republic, without any appreciable reference to the varying qualifications of the physicians who minister to the afflicted.

The layman finds it difficult to understand why disease, world-wide in its ravages, should not have a uniformly world-wide treatment; and why, if "the proper study of mankind is man," physicians should not possess a universal minimum of knowledge and training and why medical practice should not be governed by more uniform regulations. Science, the intricate and constantly growing science of medicine, which has been slowly and painfully evolving during the last 25,000 years, and which has made such marvelous progress in the last two decades, like disease, knows no race, no State, no nation. It is every man's inheritance. No discovery in medicine belongs to the discoverer. What a world crime it is, how infinitely greater than the crime of war among civilized nations, that so relatively few of God's creatures yet share in the fruits of their inheritance in medical science.

What a marvelous blessing it would be to mankind, what an El Dorado it would bring to earth, if we could suddenly carry to every bedside, to every unfortunate without a bedside, to every human being suffering with some one of the "ills that mortal flesh is heir to" the skill and the art of a modern, scientifically trained physician. If we could but do this, what inroads we could make upon pestilence, upon famine, upon unnecessary pain, upon untimely death, despite the fact that to-day, to borrow the words used by Harvey 300 years ago in announcing his discovery, "All we know is still infinitely less than all that remains unknown." The lowest, meanest human sufferer in the eyes of true medical science, and in the mercy of God, deserves "all we know." We can lay claim to but a very poor world civilization, indeed, so long as men, women, and children suffer and die in any quarter of the globe without the relief from distress, without the fighting chance for life, the science we now know might bring them.

We are told that the early Greek physician was often obliged to take a philosopher with him on his visit to convince his patient of the efficacy of his remedies. Thus Socrates and the father of medicine may have ministered together. The world seems hardly yet to have discovered that philosopher and physician are now one, and that the art of healing has in truth become a science. And yet nations differ widely in the concern they exhibit for the health of their people by the regulations they set up for the training of physicians and for their admission to practice. We find little

¹ Diagnostics of internal medicine—Butler.

evidence that medical science has penetrated into Abyssinia, for instance. We know how many millions of the subjects of Yuan Shi Kai in the new old monarchy of China¹ are, as their forbears have been, without the ministrations of medicine. We know that in Labrador, where human life is just as precious and human suffering just as acute as in France or Germany or Brazil, no doctor ever lived until 1892, until that ornament to the medical profession, whose name I have already mentioned, found his way to that barren land. The requirements for medical practice which Dr. Grenfell seems to have set up in Labrador² are the possession of a strong arm, a sympathetic heart, a clear brain, and a determined will.

Where men are now engaged in history's greatest human slaughter, there strangely enough society has set up the most exacting requirements for the training of physicians, and there the world's medical center still resides.³ In Germany and France the path of the medical student is clearly blazed by the government and the agents of government, the universities, from the time he enters the gymnasium or lyc   until, after the completion of a medical course of at least five years, he passes his final rigorous qualifying examination. In Great Britain the preliminary requirement is less exacting, but the professional training of the reputable physician is seriously undertaken. In the Argentine Republic, Bolivia, Brazil, Peru, Uruguay, and other countries to the south,⁴ the medical schools have been fashioned after the exacting ideals of France and Germany, and the educational systems, secondary and higher, are so articulated as to give continuity and definite purpose to a medical student's progress.

It is to be noted in this connection that an intelligent citizen in France or Germany or Brazil may tell an inquiring American in very few words what the universal requirement of his country is for the preparation of a reputable practicing physician. No American, unfortunately, can answer a similar question from a resident of any one of these countries. There is no requirement in the United States for the educational preparation of a physician or for his admission to practice.

There are as many standards as there are States. The District of Columbia and the State of Massachusetts, homes of great medical schools, make no provision in their medical practice acts for the preliminary education of medical students. The State of Ohio has so far misinterpreted the history and the progress of medical science as to recognize the division of an alleged medical science into no less than 14 contending medical cults. The State of Arkansas, in like confusion, has set by statute six separate and independent boards to license practitioners. The State of Minnesota values the lives of its citizens so highly that it requires two years of approved college work as a condition of admission to a recognized medical college, and the medical department of the University of Minnesota now requires a five-year course before granting the M. D. degree. It has been said,⁵ and by high authority, that we have in the United States some of the best, if not the best, medical schools in the world. It can be said, without searching for authority, that we have had many, and still unfortunately have some, of the worst. It can not be denied that an atrocious confusion still exists in the widely varying standards set up by our State medical practice acts.

In the midst of this babel of tongues and admixture of cults and scientific discovery by legislative edict, one who has for some years been interested in the administration of a State medical practice act turns always to the thought that in all common sense there ought not to be very much difference of opinion the world over among disinterested educated men concerning the permissive minimum of training for a modern physician, no matter where or how he seeks to keep the Hippocratic oath. May I

¹ Rockefeller Foundation report.

² The House of the Sea—Grenfell.

³ Medical Education in Europe: Carnegie Foundation—Flexner.

⁴ Latin-American universities and special schools—Bulletin 504; United States Bureau of Education—Brandon.

⁵ President Pritchett, of the Carnegie Foundation.

venture, therefore, to present the observations of an educational administrative officer, a neophyte in medicine, (1) upon the preliminary education of the prospective practitioner; (2) upon his professional training; (3) upon the governmental agency which regulates his admission to practice; (4) upon the statutory definition of a physician which separates practitioners from other persons.

PRELIMINARY EDUCATION.

There can be and is no real difference of opinion among educated men as to the end sought in the preliminary education of a physician, for it is assuredly nothing more nor less than a soundly educated person. We shall all agree, I apprehend, that the medical student should not begin his professional study without a comprehensive understanding of his mother tongue; without the ability to speak his own language correctly, write it coherently, and read it appreciatively; without some knowledge of the history and aspirations of his own land, and the progress of mankind as revealed by the history of other lands; without power to deduce a correct conclusion from a given set of entangled circumstances, that is, without the power to reason, which we are fond of believing is often conceived in the study of mathematics; without that acquaintance with nature and her fundamental laws which makes up so important a part of the store of an educated man's knowledge and culture; without a sound training in the initial concepts of the much mentioned physics and chemistry and biology from the true laboratory standpoint of observation and investigation and correlation with life; and without intimate acquaintance with at least one foreign language, and if he be American, preferably German or French, in order that he may throughout his life be kept freshly in touch with the thought that the medical profession, more than any other, is a world profession and its discoveries, as I have already indicated, every man's inheritance. President Pritchett,¹ of the Carnegie Foundation, has somewhere said, "There is no specific in education for making a man. The best we can do is to ask that he shall at least have passed some years in touch with great minds, noble thoughts, and high ideals, and this is accomplished, so far as human conditions can bring about such a result, by the requirement of a good general education."

In Germany and France, as we have seen, the content and scope of the preliminary training of the prospective physician, and the unavoidable course of study he pursues, is an inherent part of the educational system of the country. The leaving certificate of the German gymnasium is an entrance ticket to the medical school. There is no hit or miss about it, and no employment of the specious phrase, "or the equivalent," which works so much damage in American education. In the United States our educational systems present no closely and deliberately articulated courses in secondary and higher education leading directly to the study of medicine. Educators have shown so little concern that the doctors in recent years have taken the question into their own hands.

And so it comes about that the American Medical Association,² through its Council on Medical Education, is driven to produce "a specific for making a man." Whatever one's observations may lead him to remark concerning the educational policies of this body, he must never be unmindful of the fact that its aims are worthy and that it has perhaps done more in the last 10 years than any other single agency in the country to promote the sound preliminary and professional training of physicians, and frankly to single out the good and roundly to condemn the bad in all matters relating to medical education and practice. Briefly stated in the words of the council, this arbitrary requirement, which has the force of law with the medical colleges because of their desire to be honorably "classified," consists of the completion of "a four-year course of at least 14 units in a standard graded high school or other institu-

¹ Preparation for the Professions: Address at dedication of New York State Education Building—Pritchett.

² Journal of American Medical Association, July 3, 1915: Report of Council on Medical Education.

tion of standard secondary school grade," supplemented by "at least one year of college work, including eight semester hours each in physics, chemistry, and biology of college grade and a reading knowledge of German or French." In all kindness, it may be said that diligent search of the utterances of the council reveals the illuminating fact that "a four-year course of at least 14 units" is that maintained by a "standard graded high school"; and that a "standard graded high school" is one that offers "a four-year course of at least 14 units." It also seems to be evident that one year of college work is a year's work of college grade.

The real facts seem to be, indeed, that the requirement is artificial and arbitrary and superimposed upon the educational system by a group of medical men when it ought to have been constructed out of the educational system by school men. The sins of omission on the part of the school men are much greater than those of commission by the medical men. There is some justification for reference to a 14-unit high school course because practically all the four-year secondary schools in the country are now organized upon the unit basis. The apparent assumption of the council, however, that every high school that announces 14 units as its basis of graduation is doing the quantity and quality of work reasonably to be expected in the secondary period of a child's life is far from warranted.

There is much less justification for the artificial creation of a year's college work in physics, chemistry, and biology and a modern language. When the so-called year of college work was announced by the council, there was not a college in America above or below the "standard" offering a year's work upon a basis so pedagogically unsound; and there is no college offering such a mongrel course to-day except in answer to the hurried appeal of the faculties of the medical colleges that were laudably ambitious to be listed in Class A by the American Medical Association. The inevitable result of the announcement was, moreover, the establishment overnight of a so-called year's college work, labeled "premedical" in a goodly number of medical colleges in some attic room hitherto unused. Thus is standard college work spontaneously created. Tradition and moss are no longer useful in higher education. There is hardly a student to-day in any one of these hybrid premedical courses, or even in the arbitrary so-called year of college work being provided by colleges of liberal arts, who does not look upon the work in which he is engaged as something which has been saddled upon him, which he must speedily put off and forget. Is it too much to say that the whole program, conceived with the best intentions, is unnatural, illogical, and pedagogically unsound?

The Council on Medical Education with commendable zeal has fallen into a typically American habit, more common among teachers, perhaps, than among doctors—that of reform by resolution. Things are not what they ought to be; therefore we shall resolve that they ought to be what they are not; and presto! they are what they ought to be. Is it not entirely possible that a more enduring progress, even though slower, might have been made by insisting that all medical schools to gain any kind of recognition from the American Medical Association should prescribe as a minimum for admission a sound secondary school education to be determined, not by the medical faculties or the visé of some bureaucrat, but through the agency of some wholly disinterested body such as the College Entrance Examinations Board.¹ I hazard the remark that if every freshman in medicine in September last, in class A colleges, where one year's college work is required, had been obliged to furnish a record of 14 units in the examinations of the college entrance board, the average quality of the entering material would have been much higher than it is. This arbitrary requirement assumes a uniformity in both secondary and college work in this country that does not exist and that may not even be desirable. What is high-school physics and chemistry and biology as distinguished from college physics and chemistry and

¹ Thomas S. Fiske, secretary, New York City.

biology? What is work of high-school grade and work of college grade? What is a standard graded high school? What is a standard college course? What is a reading knowledge of German or French, and how is it to be secured and for what is it desirable? Is it never secured in a secondary school? Does any particular virtue inhere in the diluted dose of German or French given amidst test tubes and retorts in the loft of a medical school?

The truth is, no doubt, that there are public and private secondary schools, perhaps a hundred of them, in the United States with four-year courses supplementing the usual eight years of the elementary course, that turn out graduates much better prepared for the study of medicine than students who have finished one or two years' work in many so-called colleges which require 14 "paper" units for admission. A bona fide strictly enforced permissive minimum of high-school graduation, determined by reputable authority, for entrance to medical schools would give us, I confidently believe, a higher average of sound preparation than we now have and would give many States, especially in the South, where full four-year high-school courses are barely established, opportunity to maintain their dignity and to advance standards naturally as a matter of educational growth, and to avoid the confusion and subterfuge which result from the hasty effort to standardize and to classify the form of things without due regard to the substance.

With the ideals of the Council on Medical Education everyone interested in the sound training of physicians will be disposed to agree. The advance of medical science has been so rapid and the character of the professional course has become so exacting that the very best high-school courses we have in America doubtless do not now afford a foundation of sufficient depth and breadth. Assuredly the council points the way we are bound ultimately to go. Indeed, it seems now to be the consensus of opinion of medical and college faculties and educators generally, who have given consideration to the question, that a desirable minimum would be two years of study beyond the range of the secondary school. This does not necessarily mean that the prospective medical student should spend 14 years in preparation for his professional study; that is, 8 years in elementary school, 4 years in secondary school and 2 years in college. There is widespread belief that closer articulation of the courses of study leading to the medical college will result not only in a desirable saving of time but also in a sounder preparation.

Meanwhile, should we not keep steadfastly in mind the elemental physical fact that a stream does not rise above its source, even if a body of physicists should resolve that it ought to do so. Any progress that is made by a compelling subterfuge is not enduring. When our medical colleges universally require, as they seem destined to do, a minimum training such as is now secured in 14 years of study in our best elementary, secondary, and higher institutions, the enforcement of the requirement will not depend upon catalogue announcements or even upon a terrifying list of units and semester hours. The schools and colleges will have awakened to the necessity of their determining what constitutes a permissive minimum in the preliminary training of a physician and they will secure some means of determining, independent of the medical faculties, not only what the content of the four-year high school course and the two years of college work shall be but also what constitutes the successful completion of such work. When that happy day comes, also, the prospective medical student will find a sensible articulation between his work of secondary and college grade and will get in his study of whatever length beyond the elementary school, the training in science and in languages which the medical council very properly urges as essential; and more than that, he will look upon his preliminary education as a symmetrical whole, all of which he will deem necessary to his advancement.

PROFESSIONAL TRAINING.

We may differ in our opinions of the present policies that ought to be pursued in the establishment of pedagogically sound and wisely administered courses of study for

admission to medical schools; but if we consult the bare record of medical education in the United States in the last decade, we must agree that remarkable advance has been made.¹ The Council on Medical Education set up in 1905 an ideal standard to be aimed at which read as follows:

"(a) Preliminary education sufficient to enable the candidate to enter our recognized universities, the passing upon such qualifications by the State authorities.

"(b) A five-year medical course, the first year of which should be devoted to physics, chemistry, and biology, and such arrangement should be made that this year could be taken either in a school of liberal arts or in a medical school. Of the four years of pure medical work, the first two should be spent in laboratories of anatomy, physiology, pathology, pharmacology, etc., and the last two in close contact with patients in dispensaries and hospitals in the study of medicine, surgery, obstetrics, and the specialties.

"(c) A sixth year as an interne in a hospital or dispensary should then complete the medical course."

How far the ideals of the council announced over ten years ago have been realized may be understood from the following significant facts which have been in part already alluded to:²

(1) That since 1907 the number of medical colleges has fallen from 162 to 100.

(2) That in 1904 only four medical colleges required one or more years of collegiate work for admission.

(3) That of the 100 colleges now existing, 45 announce the requirement of one year and 39 announce the requirement of two years of collegiate training for admission.

(4) That by statute nine States now require two years of collegiate work for admission to the study of medicine, 18 States require one year of collegiate work, and 13 States require a four-year high-school education.

(5) That medical education is fast becoming, as it has always been in Europe and in several of our sister Republics to the south, a university function; and that the commercial medical school is doomed.

(6) That the four fundamental qualities of a good medical college, to use the words of President Pritchett,³ "Soundly administered entrance requirements, an able and devoted faculty, complete scientific laboratories, modern clinical facilities both in the hospital and the dispensary, can be obtained only by the expenditure of money."

(7) That it is generally recognized that a medical college should have a fully graded course covering four years of at least 32 weeks each, consisting, roughly, of two years of laboratory work and two years of clinical work; and that a fifth undergraduate year, to be spent in an approved hospital, should at an early date be a requirement for the M. D. degree.

(8) That graduate courses in public health have been established in 10 medical colleges.

(9) That 7,352 physicians were registered in the United States in 1910; 6,824 in 1911; 6,723 in 1912; 6,501 in 1913; and 5,797 in 1914; and that this noteworthy decrease in the number admitted to practice comports happily with the pithy remark of President Faunce, of Brown University:⁴ "We do not need more doctors, but we need more doctor."

All these considerations indicate that medical science in the United States is slowly but assuredly coming into its own. A layman hardly dares undertake to discuss the minute specifications of the Council on Medical Education concerning hours of instruction, laboratory periods, clinical facilities, and auxiliary apparatus and equipment of the acceptable medical school. He may observe, however, that over-attention to the form of the organization of a medical school may defeat the purpose for which it is

¹ Journal of American Medical Association, July 22, 1915: Report of Council on Medical Education.

² Ibid., July 8, 1915.

³ Carnegie Foundation: Ninth annual report—Pritchett.

⁴ Journal of American Medical Association, Apr. 24, 1915.

proposed. We make a fetish of uniformity in American education in every direction. Surely we do not expect that we can measure the productivity of American medical colleges in terms of laboratory periods or of lecture hours. Are we not disposed in all this business of classification and attempted standardization to overlook the indisputable fact that the chief business of a medical college is the making of doctors and that the quality of the teaching in a medical college is and always should be its first concern?

The greatest weakness in American medical education to-day, I venture to remark, lies not in the ideals that have been set up, not in the equipment that is being provided¹ not in the scientific spirit that is being fostered, not in the organization of the courses being offered; but in the apparent and yet widespread assumption that anybody who presumes to know medicine can teach it. This weakness in professional schools is hardly to be wondered at. The science of education and the profession of teaching have not yet by any means taken full possession of our public schools. The difference in the quality of the teaching between our city and urban schools and our one-room country schools is to be found in the difference between the professionally trained and the wholly untrained teacher. We have always had the notion in this country that anybody could teach school; and accordingly almost everybody has. The young man getting ready to study law or medicine, the young woman getting ready to be married, the broken-down preacher, or the failure at business, has always with ready confidence turned to school teaching. This archaic notion that anybody can teach school still retards progress in our rural schools throughout the country.

That there is a science of education and that there is a body of fundamental principles governing in some measure the imparting of knowledge and the building of manhood, whether the attempt is made in rural school, city school, college or medical school, no one denies. May it not be that medical colleges need a strong injection of educational principles? There is a deal of bad pedagogy handed out in medical colleges even by eminent practitioners. There is not only a science of education; there is also an art in teaching which the medical colleges have not yet universally practiced. Some teachers are born; many more are trained. Why should we not have graduate courses in medicine and public health for the training of teachers for medical colleges? To be sure, much of the clinical instruction will always require the freshness and the vitalizing influence of the active practitioner; but there is no reason why even he should not be pedagogically as well as scientifically alive. There is much in the administration of the medical colleges in Germany that we are not disposed to copy in this country; we should do well, however, to take note of the scholarly resources and the mental alertness of their medical teachers.

Mr. Abraham Flexner,¹ to whom one who looks into this question at all must constantly acknowledge indebtedness, has pointed out that investigation and practice are one in spirit, method and object; that the modern medical school must be a productive as well as a transmitting agency, and that an exacting discipline can not be imparted except in a keen atmosphere by men who are themselves in training, and that there is room in every medical faculty for the teacher who is "a generally productive scientist" and for "the nonproductive assimilative teacher of wide learning, receptivity, critical sense and responsive interest." He says further,² "the one person for whom there is no place in the medical school, the university or the college, is precisely he who has hitherto generally usurped the medical field—the scientifically dead practitioner, whose knowledge has long since come to a standstill and whose lectures, composed when he first took his chair, like pebbles rolling in a brook, get smoother and smoother as the stream of time washes over them."

¹ Medical Education in the United States and Canada: Carnegie Foundation—Flexner.

² Medical Education in Europe: Carnegie Foundation—Flexner.

THE LICENSING EXAMINATION.

It is everywhere conceived to be the duty of the State to protect its citizens by adopting some means to determine who shall and who shall not practice medicine. This function is performed in Germany, France, Great Britain, and in many other countries by national agencies, not by provinces or separate States. Rigorous examinations are conducted in Germany and Great Britain, for instance, which are calculated to discover what the prospective physician knows and can do rather than what he does not know and can not do. To this end, an important part of the examinations is oral and practical. Thus, an examination in anatomy in Germany¹ includes actual dissection before the eyes of the examiners. An examination in medicine includes the observation of the patient and the actual diagnosis of a case. An examination in obstetrics requires actual attendance upon a delivery. In the United States, the licensing of physicians is regarded as a police power and the function is performed by the several States so that in practice 48 States set up examinations through the agency of their medical boards. The examinations have hitherto been largely written and no noteworthy oral and practical examinations have yet been established.

The efficacy of formal extra-mural examination has been a question of debate throughout the history of education. On the one hand, we have the ideals of the Greeks who believed that true education is conceived in disinterestedness and that to teach with an eye to a reckoning is to destroy the fundamental purpose of education. On the other hand, we have the spectacle of China where all teaching has for centuries been directed explicitly to the great national examination goal. Between these two points of view, we find that examinations are regarded as a means to an end and in many quarters as a necessary and unavoidable evil in education. Wisely used and properly controlled, it is held by many educators that examinations may do unmeasured good. Allowed to dominate teaching and to control school systems, they may on the other hand, it is held by many others, become a positive menace. The teaching in elementary school, high school, college or professional school that is based primarily upon the prospect of a final examination is apt to be unnatural and likely to store the mind with facts at the expense of the development of real power to do.

It must be granted that the examinations of our State medical boards have had much to do with elevating medical standards because they have compelled the medical colleges to widen their courses and to give their students a certain minimum of instruction. The necessity of such a function on the part of State boards is rapidly disappearing with the fortunate disappearance of the medical college that is the subject of such compulsion. On the other hand, it can not be denied that the examinations set by our State boards tend to follow the Chinese ideal in education rather than to be predicated upon the Greek notion of building from within. It is not surprising, therefore, that the goal of much medical education in the past has been not the training of doctors, not the preparation of men for successful professional life, but the drilling of candidates for licensing examinations. The same charge may be made against many of our law schools in America whose chief business seems to be the preparation of candidates who may successfully surmount the barrier of a bar examination. We are not to suppose that this tendency to set examinations which largely test the memory and really fail to get at the power of the individual are characteristic only of professional schools. The secondary schools throughout the country are addicted to the habit of testing the memory of their pupils, and the objectionable side of the examining habit is not absent from our colleges. Busy practitioners of medicine who give all the spare time at their command to the promotion of their profession by serving upon State medical boards can hardly be expected to correct a longstanding educational evil in this and in other countries.

¹ Medical Education in Europe: Carnegie Foundation—Flexner.

That our medical licensing examinations in the several States are practically memory tests is evidenced in some degree by questions used in recent examinations in two States,¹ which I have selected at random, as follows:

Anatomy.

Designate the relations of the valves of the heart to the surface of the chest.
Name the superficial muscles of the back.

Physiology.

What are the functions of the lymph?
Describe the muscular movements of the large intestines.

Chemistry.

How may cane sugar be distinguished from grape sugar?
Give a brief outline to determine the fitness of water for drinking purposes.

Surgery.

Discuss the relation of cancer to chronic irritation.
Give symptoms and treatment of subphrenic abscess.

Obstetrics.

How is nutrition supplied to the fetus?
What is the third stage of labor?

Pathology.

Describe the blood of pernicious anemia.
What morbid conditions in the mouth give rise to systemic disease; name some of the latter and the manner of their production.

Diagnosis.

Differentiate between shock and acute hemorrhage.
When a general increase in the size of the liver is found, what does it denote?
If these examinations are designed to test the memory of the medical student then no objection may well be found to them. If, however, they may fairly be assumed to try to discover whether or not the candidate is competent to heal the sick, then they seem to an uninitiated layman almost wholly to miss their point. I submit that the full examinations offered by two States, represented by these samples, which are reasonably typical of the examinations of all the States in the country, might possibly be passed by an intelligent person who devoted himself assiduously to textbooks for a year without ever having been in a dissecting room, without ever having picked up a retort in the laboratory, without ever having witnessed a surgical operation, or without ever having sat at a bedside to note the actual conditions of a disease. This statement is not to be taken as a reflection upon the accomplished physicians who frame the questions. The inevitable result of their labors is beyond their control. We shall all agree that a physician should have knowledge and power to use knowledge. Written examinations may discover his knowledge; they certainly do not reveal his power. Nothing short of severe oral and practical tests will adequately determine whether or not he should be turned loose on the public.

That a body of eminent physicians is aware of this mechanical examining process of which all States are guilty is cause for congratulation to the entire medical pro-

¹ New York, June, 1915; Ohio, June, 1915.

feession. A national board of medical examiners has already been organized and its first examination will probably be given in June, 1916. That board consists of six men from the Government service, three surgeons general and three men appointed by them, three appointed by the Federation of State Medical Boards of the United States, and six selected at large by the National Board of Examiners itself. It is expected that the examination will be held for the present at the Army Medical Museum in Washington, and that the laboratories and hospitals of the Army, Navy, and Public Health Services will be at the disposal of the board. Plans are being made for practical and oral examinations. It is yet too early to indicate what the probable success of this new departure in American medical education is to be. The scheme can hardly meet with the success that it deserves until it has power from Congress to compel as well as to invite. Surely we shall one of these days in this country, through a central national agency, undertake to find out before men and women begin to practice medicine, not simply how many facts they have stored up in their heads, but how much manhood and womanhood they possess and how much real live practical knowledge they have of disease, its prevention, its diagnosis, and its cure. One who reads the medical practice acts of the several States can not believe that any agency short of the National Government will ever be able to perform this function as it ought to be performed.

WHAT IS MEDICAL PRACTICE?

The real crime in America in all this business of medical training and licensure lies in the varying definitions in the medical-practice acts of the several States. The real test of a State's desire to protect its citizens from cults and charlatans and to admit to medical practice only those who are scientifically prepared to heal the sick is to be found in two considerations: (1) Who is admitted to the medical licensing examination, and (2) what definition of the practice of medicine keeps the quack out. We shall have time for two illustrations only, and I select the medical statutes of the States of New York and Ohio, not because I necessarily believe that New York's statute is ideal, or because I believe that Ohio's is the worst to be found, but because the statutes of these two States do now represent two varying, widely differing ideals of what constitutes preparation for the practice of medicine and of what actually is the practice of medicine.

In the State of New York, under the statute now in force, no one may be admitted to the practice of medicine through the usual course who is not 21 years of age, of good moral character, who does not possess, before beginning the study of medicine, an education equivalent to the successful completion of a four-year high-school course, including a year's study of physics, chemistry, and biology, and who has not graduated from a four-year course in a registered medical college, and who has not passed the licensing examination set by the State Board of Medical Examiners. The public is protected in the State of New York by this definition of the practice of medicine:

"A person practices medicine within the meaning of this article, except as herein-after stated, who holds himself out as being able to diagnose, treat, operate, or prescribe for any human disease, pain, injury, deformity, or physical condition, and who shall either offer or undertake, by any means or method, to diagnose, treat, operate, or prescribe for any human disease, pain, injury, deformity, or physical condition."

The one noticeable weakness of the New York statute is to be found in the provision which authorizes the licensing of doctors of osteopathy. This provision in the statute does require that doctors of osteopathy shall pass the regular State medical licensing examination and shall meet all of the other requirements specified for all other candidates except that their study may be in a registered school of osteopathy instead of a registered school of medicine; and the license to practice osteopathy does not permit the holder thereof to administer drugs or perform surgery with the use of instruments. It happens that at the present moment there is no school of osteopathy in the United

States registered by the State board of regents. I make this statement with reference to the practice of osteopathy without any thought of doing injustice to reputable practitioners who have secured licenses under this provision of the statute. I make the statement with the firm conviction that no State ought to recognize any cult or school of medicine whatsoever. The State of New York is perhaps as nearly free from an attempt to split up medical science into mere man-made cults as any State in the Union.

The general requirements in the State of Ohio for admission to the medical licensing examination are that the candidate shall be 21 years of age, of good moral character, have a minimum preliminary education equivalent to four years of high-school study, and possess a diploma from a legally chartered medical institution in the United States in good standing as defined by the board at the time the diploma was issued. These requirements are not less than those of several other States. Provision is also made for the licensing of osteopaths, who are not permitted to prescribe or administer drugs or to perform major surgery. What constitutes the practice of medicine, surgery, and midwifery in the State of Ohio appears in this provision of the statute:

"SECTION 1286. A person shall be regarded as practicing medicine, surgery, or midwifery, within the meaning of this chapter, who uses the words or letters, 'Dr.,' 'Doctor,' 'Professor,' 'M. D.,' 'M. B.,' or any other title in connection with his name which in any way represents him as engaged in the practice of medicine, surgery, or midwifery, in any of its branches, or who examines or diagnoses for a fee or compensation of any kind, or prescribes, advises, recommends, administers, or dispenses for a fee or compensation of any kind, direct or indirect, a drug or medicine, appliance, application, operation, or treatment of whatever nature for the cure or relief of a wound, fracture, or bodily injury, infirmity, or disease. The use of any such words, letters, or titles in such connection or under such circumstances as to induce the belief that the person who uses them is engaged in the practice of medicine, surgery, or midwifery, shall be prima facie evidence of the intent of such person to represent himself as engaged in the practice of medicine, surgery, or midwifery."

No special criticism may be made of this definition. The real sin in the State of Ohio is to be found in section 1274-1 of the medical statute, passed by the legislature April 27, 1915, and approved by the governor on May 1, 1915, which reads:

"SECTION 1274-1. The State medical board shall also examine and register persons desiring to practice any limited branch or branches of medicine or surgery, and shall establish rules and regulations governing such limited practice. Such limited branches of medicine or surgery shall include chiropractic, naprapathy, spondylotherapy, mechanotherapy, neuropathy, electrotherapy, hydrotherapy, suggestive therapy, psychotherapy, magnetic healing, chiropody, Swedish movements, massage, and such other branches of medicine or surgery as the same are defined in section 1286 of the General Code that may now or hereafter exist, except midwifery and osteopathy."

This latter section of the Ohio medical statute does not represent the sober thinking of the reputable practitioners of medicine in that State, does not represent the thinking of the schoolmen of the State, but does illustrate how completely the interests of the people, their health and welfare, may be overlooked in the hands of politicians. Medicine and politics will never mix in the interests of the people. The only hope a layman can see for the elimination of quackery and for the exaction of a knowledge of the scientific basis of the healing art from any person who would offer in any way to relieve human suffering for hire, lies in a national agency that will recognize one medical science and one scientific medium of preparation for admission to its practice.

CONCLUSION.

One must, in conclusion, in the face of the conflicting statutes, the contending cults, and the apparent failure of true medical science yet to triumph over medical

and political empiricism in this country, confess that he should need more than the stoicism and the lantern of Diogenes to discover who is a real medical practitioner. And yet, though the qualifications of the real practitioner may not now be described, we know that he does already exist, because we know that many men are always bigger than statutes. You have called the real practitioner to your bedside, I to mine—a man who “has more important business in hand” than the making of money, who “joyfully explores unknown fields,” not only for the immediate comfort and welfare of his patient, but also to add to his own knowledge and to the world’s store of “all we know” in medical science.

In 10 or 20 years, perhaps, we shall be able to say that a medical practitioner is one who possesses a sound liberal education, who has covered the scope and the content of academic and college training now represented by the successful completion of a four-year course in our best high schools and a two-year course in our best colleges, and who does not possess a fragment of science and a smattering of a foreign language, picked up in one school or another, but who secures in an articulated course of secondary and college study a lifelong interest in the fundamental sciences underlying the study of medicine and a grasp of a foreign language that serves continually growing useful purposes; who has been trained professionally for a period of five years in an institution devoted to medical science and to human welfare, which profits in its organization, its method, and its equipment by the world’s experience; and who has secured through meeting the written, oral, and practical standards set by some national agency the right to pursue his science and his art wherever the American flag flies. He will not represent this school or that; he will not be confined by the littleness of any “pathy” of medicine. He will have awakened to the world fact that disease and medical science know no boundaries and that every human sufferer is entitled to his just inheritance of human care. He will be able to see without eyes, to hear without ears, to touch without fingers; and so the better part of him will not be reducible to scholastic standards, but will be measured only by the fealty with which he subscribes to these words from the Hippocratic oath:

“With purity and with holiness I will pass my life and practice my art.”

The CHAIRMAN. The papers presented at this session are now open for discussion.

Mr. BARTSCH. I was very much pleased with Dr. Waite’s paper. We have created an entirely distinct subject of study in this country which we call biology. I have always said American biology, for the course which is presented in our high schools and our universities is not biological but it is a hybrid botanical-zoological course. There is only one thing to be done, and that is that we eliminate biology from our requirements. Let us get rid of this indefinite term. There are no two teachers in the country who understand exactly the same thing when you say biology. Why not say botany and zoology? Biology deals with the life properties of living matter, and living matter is living matter whether it is plant or animal. But what we are dealing with here in the matter of requirements for the medical man is a through groundwork along definite lines, and those definite lines are chiefly zoology. They are not in the strict sense of the term biology. A man ought to have a basic understanding of the two sciences mentioned as a preliminary to his study and training in medicine. It seems to me, therefore, if you would eliminate the

term biology and require botany and zoology that it would be a desirable thing to do.

I should be extremely glad if at the next meeting of the Council of Medical Education of the American Medical Society Dr. Waite would present this same paper. His paper would be presented there under such conditions that we might get quicker action in regard to the things he suggests.

Now, when it comes to the question of whether the university or medical college should undertake the premedical work and to the statement that Dr. Waite made that a subject should be taught for its own sake, I am inclined to differ with him. I could give the student a course in zoology which would be absolutely meaningless as far as its application to medicine is concerned. I could select such standard types as we use constantly in the classroom for explaining the various organisms but they would have absolutely no bearing beyond the biological principles they expound. On the other hand, those same principles or the information and knowledge of these principles, can be acquired just as well by selecting definite types that will have a bearing upon the student's future work. Every name means an organism of vital importance to the medical man. He must know these and he should know them. Why not select these as the types? They will give you all the biological information that you should need just as well as a form that is only of general importance because it occurs in text books.

The CHAIRMAN. Is there any further discussion? We should be glad to hear from any of our visitors.

Mr. TREADWELL. In regard to the word biology, I would venture to suggest that instead of it being an American term it is a hyphenated American term, having been taught us by Huxley. I would also say that his proposed premedical course would not be the best one-year course for a college of liberal arts, and that a teacher of liberal arts would find it necessary to use other forms because some of these forms that are specially desirable for a medical student are not really typical of general animal zoology.

Mr. LYONS. I would like to call attention to the fact that the premedical work should not embrace anything that is going to be covered by the field of medicine. I had quite an extensive biological training before studying medicine, and took a complete course in mammalian anatomy. When I came to human anatomy I had lost my interest in anatomy, because it was merely a repetition of the same thing over again. I did not manifest the interest in it that students just out of the high school did. So I think the subject of comparative anatomy is much more important than the study of an anatomical type.

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Mr. BARTSCH. May I make a further statement? We must bear in mind that this statement from Dr. Lyons is a statement coming from an eminent specialist. So when he studied his cat, or whatever animal he had, he went at it with such a zest and studied it in such detail that when he became a man there was nothing left to be known. But those of you who have devoted many years of hard work to human anatomy will remember what an important subject it is, and you will readily realize that 10 weeks upon a mammal can do no more than give you a thorough grounding.

I have found that some of my students who have gone into anatomy approach the dissection of the human body with horror. They shudder and there seems to be something about the work that at first prevents their fingers from adjusting themselves properly; but I have never heard anyone who has done the comparative work complain of anything of that sort. From the first they are interested in the work.

Mr. DAVIS. It is quite a privilege to have the supervision of the instruction in the medical school of some of these students who have had this preliminary biological training. It has been of a great deal of interest to me to analyze the results of this biological training. I take it the basic principles as outlined by Dr. Waite are absolutely ideal. I believe further that the principles as outlined by Dr. Bartsch are sound and scientific. The study of mammalian types as taken up in such a course is necessarily somewhat elementary, and it should not, and I believe with a majority of the students it does not, detract from interest which they should evince in the study of human anatomy as they get it in the medical school. Its study is then much more in detail than anything they can possibly get in their preliminary biological course as to make it altogether a different type of study, and the work they have gotten in their mammalian anatomy section in a preliminary work only serves to emphasize to them the differences which exist between the human and the other forms which they have taken up.

The CHAIRMAN. If there is no further discussion we will ask Dr. Waite to close.

Mr. WAITE. I agree entirely with Dr. Bartsch on the question of the use of the word biology. It means everything apparently in the minds of the layman. I had a student apply not long ago for entrance. He was short on biology and he wanted to count a course in phrenology that he had taken as biology, and he was earnest in his belief that that was biology.

Now I am very glad to take direct issue with Dr. Bartsch on the question of premedical years, and my opinions are derived from the fact that it has been my duty to inspect the premedical years of several colleges in this country. I grant that a premedical year

can be given by a college if they can devote about \$10,000 a year to it, outside of the rest of their budget, but they need a man in each of the three sciences who is disconnected with the medical course. Of course they may teach it in the same building, and so on.

I would like to emphasize what I said in conclusion in the paper which I read. The advance in medical education—and by that I mean the education that is laid down in the first two years in the medical course—lies now through cooperation with the teachers in the colleges of arts and sciences. I do not believe that we can, the country over as a whole, get out a syllabus of a course in biology but I do think that we can indicate some absolute essentials and leave to the individual teacher the elaboration of his course. For instance, if a man is well acquainted with one phylum, like arthropoda, and has a great interest there, he can teach with more enthusiasm the principles of biology upon arthropodas than he can upon worms, and I should therefore let him emphasize that field rather than require him to emphasize something else which he is less interested in. That is, I do not believe in a syllabus, but I do believe in cooperation based on certain essentials, and of those essentials cytology is the most essential.

Adjournment.

SESSION OF SUBSECTION 10 OF SECTION IV.

PAN AMERICAN UNION,
Thursday morning, December 30, 1915.

Chairman, ROGER W. BABSON.

The session was called to order at 9.30 o'clock by the chairman.

The CHAIRMAN. We shall first have a paper by Prof. Roswell C. McCrea, Dean of the Wharton School, University of Pennsylvania, on the subject "The curriculum of a school of commerce."

THE CURRICULUM OF A SCHOOL OF COMMERCE.

By ROSWELL C. MCCREA,
Columbia University, New York City.

The contrast in tone between old and new among the advocates of commercial education of collegiate grade is as significant as it is interesting. Thirty years ago the attitude of advocates of vocational studies in the college curriculum was insistent, but full of the spirit of concession. Utterances typical of this attitude are numerous, but none could be more clearly illustrative than one made by Joseph Wharton in 1890:

"I do not favor abandoning 'the humanities,' or limiting education to narrow utilities. Though in the vast machine of a modern community each man must fit to his place and perform his special function like a wheel or a screw, the man must be much more than a wheel or a screw; he must be a man alive in his spiritual part, with the windows of his soul open to the heavens. * * *

"The college holding fast to the best of its traditions will care for this completeness of growth, this symmetrical development, as no 'commercial institute' and no shop, trade, or office training can do; therefore it is the improvement and not the destruction or superseding of college education that must be achieved.

"How valuable is this molding of the young mind into good form, and into variety of attainment, may be partly guessed by those who observe the respectful regret that is sometimes shown by intelligent and successful men in the presence of college-bred men who are perhaps inferior in strength to themselves. Even Darwin, with all his surpassing success as a specialist, lamented the imperfect development which debarred him from enjoyment of art and music. * * *

"The colleges are sure to offer abundance and variety of mental pabulum beyond the most robust digestion. My plea is that while thus offering so bountiful a feast of delicacies they should also give to their students that more homely and nourishing fare, that 'meat for men' which they can assimilate to carry them through their homely labors."

It is a far cry from this plea for potatoes in the educational bill of fare to the tone of present-day discussion. The new attitude is militant, without apology and without

concession. Growth has bred assurance, and success is interpreted as justifying the new movement as well as the educational philosophy which underlies it. Groups of commerce courses have found their way into the curricula of at least one-half of the colleges and universities of the country, and so-called schools of commerce every year dot the educational map with increasing frequency. The hopeless inadequacy of some of this provision seems to provoke little dissatisfaction on the part of heads of institutions, so long as concession is made to an obvious popular demand and dividends are yielded in increased enrollment. But on the whole development has been sound. Better methods, better teachers, better textbooks, and better pedagogical accessories of other sorts point to further rapid and wholesome growth.

The organizing of the curriculum is of course the central problem of any school. The solving of this problem on the part of a graduate school of commerce and business administration is a relatively simple one so far as the determining of general tendencies is concerned. The curriculum of such a school may well be highly technical, narrowly confined to business problems, and conducted by methods of instruction which largely follow the research plan. The student who enters such a school has presumably completed a course of liberal study in some college. His new connection with a school of business is analogous to that of a medical student with a school of medicine. The ideals of such a school are strictly professional.

The school of commerce of undergraduate type likewise has professional ends, but its ideals are less strictly vocational and its methods more closely approximate those of a college of liberal arts. The main variation from the scheme of the college is in the content and arrangement of courses. This statement will doubtless sound heretical to the advocate of the old-fashioned college discipline. But it need not be so. A school of commerce may so organize its four years of study as to realize most of the primary aims of college instruction in discipline and breadth of view, and at the same time lay the foundations for speedy adaptation to the requirements of later business life. The general tendency of instruction with these ends in view should be sufficiently clear. There should be training in the fundamentals of business science and practice. This involves the giving of required foundation courses in accounting, business law, commercial geography, money and credit, industrial organization, insurance, and marketing, with further provision for elective specialization in these and related fields. The purpose of this specialization should be, so far as may be, to provide effective tools for the subsequent handling of technical problems beyond the routine of daily business life. But in the pursuit of this end it seems to me that general educational aims should ever be in the foreground. I see no reason why, with a properly organized curriculum, a school of commerce should not realize many if not most of the ideals of the college of arts and science, at the same time embodying democratic ideals and a purposive quality that the old-fashioned college has in large part lacked. To this end narrow specialization must, of course, be avoided. Courses other than strictly technical ones must be woven into the curriculum in such a way as to develop on the part of the student liberality of view, intellectual perspective that extends beyond and behind purely contemporary phenomena, a socially minded attitude toward public problems, and a mental discipline and grasp of scientific and philosophic methods toward the realization of which every really educational institution aims. The president of one of the best of our smaller colleges in the course of a recent commencement address, emphasizing the importance of education which develops mind and character and prepares for leisure hours, says this:

"The vocational education does not furnish all that a worker of any sort needs, nor does it furnish that which is really most essential to our national well-being.

"But in the general infusion of our education with popular demands there is a danger that this (the liberal) view shall be omitted, that schools, even private schools and colleges, shall one by one lose their grasp on the demands of a larger training, and through ambition for numbers shall add course to course which caters to the nar-

row view, and thereby aid in further perverting the national standards. Many colleges are announcing technical courses for which they have no adequate facilities, with a view to catch the popular demand for practicability and so increase the student list. Earnest cries come from the scholarly members of faculties for arguments to meet these crude tendencies; for presidents to stand against the temptations always severe for a president to get numbers and endowment at the expense of ideals and quality. Some recent inquiries only serve to emphasize the increasing growth of the supply of superficial education to meet a real but mistaken public demand. But they also call attention to the stronger emphasis laid by a smaller number of colleges on the importance of real scholarly values, upon thorough training in essential power-producing subjects, and the resistance of the temptation to take every boy for which excuse can be found, with the hope that he will not seriously injure the college standards.

"We are concerned to-day with the age-long results of education. Not necessarily produced by Greek and Latin alone, but by studies that demand serious and protracted mental effort, which teach the boy to think and work, which arouse ambition for scholarship as a worthy end in itself, which show themselves in a developed brain power rather than in obviously directed efforts toward business success.

"It is not at all impossible that these results constitute the best road to business success."¹

I see no reason why these strictures should necessarily apply to a university school of commerce. It is the spirit in which work is pursued, and the method employed in its teaching that marks the essential difference between what is educationally beneficial or baneful. Even in a school of commerce one should not merely condone but insist upon the presence of at least one inspired teacher in its faculty who, whatever his specialty, has an interest in the universal. I find myself quite in sympathy with Samuel Crothers when he writes thus in his usual facile vein:

"Time was when the philosopher walked in a grove with a group of eager youths who shared his curiosity about the universe. He liked to talk with them about the whence and whither and the why of everything. They asked questions which they were well aware admitted of no definite and final answer. They disputed with one another for the sheer joy of intellectual conflict. The disputations sharpened their wits, but they got no results. In fact they were not seeking any results that an efficiency expert could recognize. The free use of their minds was joy enough. Now it is evident that a modern university is too serious a place for much of this sort of thing. Life is too short, and business is business, and time is money. Youth must be up and doing, and not lose its opportunities by meditating overmuch on the ultimate reason of things.

"Still, it seems to me that in the most efficient university there ought to be room for at least one philosopher, and he should not be compelled to teach philosophy by the 'scientific method.' He should be allowed to practice the philosophic method, which is really an excellent one for its own purpose.

"The philosopher, finding himself in an intellectual community where the interests are highly specialized, becomes a little uneasy and self-conscious. In order to be in the fashion he must appear to be a specialist also. And so he frequently disguises his real aim by a critical apparatus which imposes on the undiscerning. It is all the more refreshing when we come across a philosopher who is interested in the incomprehensible universe, and who doesn't care who knows it."²

It may seem extravagant and misdirected idealism to advance the possibility of affording in a school of commerce an education, from which waste motion has been largely eliminated, which is at once liberal and purposive, sufficiently general as

¹ Isaac Sharpless: A Commencement address, delivered June, 1915. Printed in The Alumni Register, University of Pennsylvania, November, 1915.

² Crothers: Protective Colorings in the Educational World, Atlantic Monthly, December, 1915.

well as sufficiently specific both in methods and in results. We must of course realize that full preparation for activity as well as for leisure is too large a contract to be fulfilled in the four years of a college course. It is a growth of a lifetime, and culture in particular is a product, not so much of the classroom as of the environment, sustained and handed down by tradition and social imitation. Still it is not too much to ask that the student be brought into contact with various types and methods of the intellectual life. It is not so important that courses be numerous and varied as that they should show the differentiation that characterizes intellectual activity. Science, art, historical perspective, professional bent, zeal for social and individual betterment are phases of mental and spiritual outlook and action which should be immanent in the curriculum even of a school of commerce.

To be more specific, the curriculum of a four-year student should to my notion include not only required courses dealing with broad fundamental aspects of commercial and industrial organization and activity, but as well properly devised courses in English, history, psychology, economics, politics, sociology, and biology or chemistry. The title of a course is not important. A course in advertising and selling might include methods of reasoning and of handling material such as arise in the study of psychology. The sociologist might perform a similar service for the biologist. The economist would more than likely use methods of theoretical analysis characteristic of a course in pure philosophy, and his interests might be almost equally remote from the strictly practical. The economist, the sociologist, the political scientist, the teacher of accounting and of finance might equally emphasize a social point of view in developing their respective generalizations. But in any case such a combination of studies as I have indicated, taught by experienced teachers of large ability and of high pedagogical ideals should work quite satisfactorily as the required portion of a four-years' course of study. It will be noted that I have omitted mathematics and foreign language work from the list of required studies. Both it seems to me should be left in the list of elective courses. The student to whom these studies give promise of subsequent usefulness will enter their study with interest and profit; but I have seen little value in them to a student who has been forced into their study and finds no interest in them. From the standpoint of utility, college mathematics is ordinarily not of fundamental importance in the equipment of the business man. With increasing differentiation of occupation in large industries the commercial department has become separated from the engineering, or production department, and two distinct classes of men are employed in them. The engineers plan the shops, arrange the details of construction, and decide on the cheapest and most available methods of manufacture. The goods produced are turned over to men who know little of the methods and details of construction and manufacture, but who are familiar with business conditions in the world's markets and with the problems of finance and credit. The mental processes and the activities of these two groups of men are distinct. An engineer must solve problems that demand a long train of reasoning and exact calculations. The builder of a bridge must calculate the weight and size of each part, know its cost, and measure the strength and durability of the structure; but the price at which the bridge ought to be sold depends upon many other conditions that rapidly change and can not be determined beforehand. The business executive or the salesman must be not a long reasoner but a rapid one. The chain of involved thought in the sale of a bridge is unlike that necessary to its construction.

The training of the business man on a very important side has to do with a thousand little things that constantly repeat themselves and not with a long series of facts each depending on its predecessors. He must be skilled in perception. His thought must be quick and instinctive. He must see a few simple relations among complex confused facts and keep cool and firm when others yield to excitement and surprise. Clear thinking under these conditions results less from a study of serial problems in higher mathematics than from the solving of the miscellaneous

examples to be found in the old-fashioned arithmetic and the first book of geometry, where combinations are flexibly made in many new ways. The business man needs mathematics, but it should be taught through the fresh, vigorous handling of elementary problems and not through the complex serial thinking that higher textbooks emphasize.¹

For purposes of mental discipline there are various substitutes for mathematics. For training in analysis there is ample scope in the study of accounting, of political science and business law, where the case method is used, and of economic theory.

Foreign language study is usually urged because of the discipline it affords, because of its utility in intercourse with foreigners, and because it opens a new avenue to an understanding of the literature and life of other people. From the disciplinary standpoint the disadvantage is that results are hardly commensurate with the time spent in study. Equivalent discipline may be secured more readily in other ways. From the standpoint of practical serviceability the great difficulty is that not more than 1 student in 25 gets enough out of his course to put it to practical use. For the few who may have subsequent use for a language ample course provision should be made; but no student should be forced into a meaningless routine looking toward ends that are not realized. The opening up of new fields of culture is quite as vain for the usual student as the utilitarian ideal. He never acquires sufficient ease in the use of a language to approach the study of a foreign literature with any degree of sympathetic understanding, unless he does it through English translation. He might better have courses provided in his mother tongue dealing with the development of foreign civilizations, emphasizing nineteenth century conditions and changes than to plod away for two or three years to an end so slightly commensurate with effort expended.

With reference to the order of presentation of studies in undergraduate schools of commerce, two main plans seem to be followed. One is that of providing two preliminary years of liberal training of ordinary collegiate type, followed by two years of more special study of business subjects. The contrasted scheme is that of combining and mixing business studies and those of the liberal arts type throughout the four years of the course. In the Wharton School we have experimented with each type of organization. In our experience advantages preponderate on the side of the mixed scheme of organization. We now proceed on the assumption that the generally preparatory years should in large measure end at the college threshold, and that the young man should enter at once upon new subjects demanding fresh thinking, the content of which may yield both discipline and training. In the freshman year the student should be placed in intellectual touch with his environment—physical, economic, social—and taught how to use its component parts. The second year should emphasize mental processes so that he can turn to principles developed in the first year's work and apply them more fully to practical affairs. Two such years should develop a viewpoint, often so sadly lacking in the amorphous preparatory years, should awaken enthusiasm, and help toward an interpretation of the world of affairs. The last two years should be both more general and more specialized. The business man must have breadth as well as special training, for he invariably touches at some point the social, economic, and cultural problems of his time. It would seem unwise to exhaust the first two years of his course in elementary liberal studies, and then compress in the last two years the routine tasks that prepare for his future career.

A man should know his business before he knows the world. Otherwise the diverse influence of his environment will pass through his mind without being vivified in his thinking, harmonized with his plan of life, or utilized in his experience. The interpretation of his cultural surroundings should be begun by means of selected courses pursued during the last half of his college life. If the university term is to be short-

¹ Cf. Patten: *University Training for Business Men*, Educational Review, March, 1906.

ened, take away the first year and not the last, because as a senior the student meets the ablest teachers and is admitted to their most inspiring lectures. Let a study of fundamentals of the physical and business environment exert its influence during the first years, while the boy's preparation for his career is receiving initial impetus, and do not narrow the horizon in the last two years by an intense specialization that will result in efficiency at the cost of a restricted intellectual growth. He needs specialized work, but he also needs to be helped in his interpretation of the new cultural experiences coming to him.

This view has largely dominated our Wharton School organization of courses. The freshman year includes work in English, accounting, business law, economic geography, government, and economics. In the sophomore year the work in English continues, and new courses are opened dealing with money and credit, industrial organization, insurance, transportation, and marketing. These courses are taught in a way that serves to afford a direct introduction to the more advanced and more technical work of the last two years, in which election determines the line of specialization. Many students, however, do not specialize, and all in the last two years cover a great variety of courses in economics, sociology, politics, history, English literature, psychology, anthropology, foreign languages, and other general college studies.

The experience of our school in the matter of registration and attendance suggests that by organizing a curriculum as we have done, we get and hold a much larger number of students than could be induced to attend a course of the older type, with its two specialized years superimposed upon two years of liberal studies. The following table showing the enrolment in the respective classes during the past six years furnishes interesting material for comment in this regard; the percentage figure indicates the proportion of a given class carried over to the next higher class in the following year:

Students.	1910-11	Per cent.	1911-12	Per cent.	1912-13	Per cent.	1913-14	Per cent.	1914-15	Per cent.	1915-16
Seniors.....	77	.....	67	.....	61	.....	69	.....	102	.....	136
Juniors.....	71	94	68	90	92	75	123	83	154	88	170
Sophomores.....	111	61	143	64	137	90	177	87	201	84	263
Freshmen.....	232	61	228	60	290	61	357	56	400	66	445
Special 2-year course.....	17	.....	19	.....	28	.....	26	.....	23	.....	34
Partials.....	27	.....	19	.....	29	.....	35	.....	36	.....	35
Total.....	535	.....	544	.....	637	.....	787	.....	916	.....	1,083

It will be noted that there has been a considerable mortality between the freshman and sophomore years and a similar falling off between the sophomore and junior years. The junior class, on the other hand, seems to come nearer to holding its own in the senior year than is the case with the earlier years of the course. Some of the decline in numbers between the freshman and sophomore years is due to the rigorous enforcement of scholastic requirements during the first year; but the falling off in both of these years is attributable, more than to any other cause, to the fact that a large proportion of our students come with the express intention of spending only one or two years in acquiring what they regard as the essentials of business training. By the end of the sophomore year most of the men of this type have devoted to college work all the time they can give. Those who go on through the latter two years for the most part are those who have come with the preliminary intention of getting a four years' college course in which business subjects have been made a matter of emphasis. If we were to return to the old arrangement involving two years of general work, followed by two years of special business training, I have no doubt that the enrollment of our earlier years would fall off by at least 50 per cent, and we should be confronted with

the necessity of conducting a special business course for those who could not enter the regular course on these terms.

A further advantage of the four-year mixed curriculum is its effect on the attitude of the student toward the school and toward the student group of which he is a part. A junior and senior group made up of those who have been transferred for special study from a college in which they have had two years of liberal study, always look back on the college as the place to which they owe their first allegiance. This interferes with the development of an attitude of school loyalty and an esprit de corps among the students taking commerce courses. The mixed scheme on the other hand attaches the student to the commerce group from the start, and develops a group solidarity that immensely simplifies problems of government and discipline, school promotion activities, and betterment work of every sort.

There is a further incidental advantage in the fact that a growing number of students who enter the school with limited, short-sighted, purely practical aims, and with the intention of concentrating as narrowly as possible on some business specialty, are gradually swept into the current of broader interests and activities.

A substantial number who enter with the expectation of taking only a two-year course as specialized as we will allow them to take, develop an interest in the more general courses of freshman and sophomore years and stay to complete the four-year course. To indicate how widely students of a four-year school of commerce may participate in matters of general concern, I need only refer you to our experience at Pennsylvania. Wharton School students act not merely as business managers of teams, societies and student publications, but serve in larger number than any other student group in the university as editors and contributors to student publications, literary and otherwise.

The question of the extent to which general social studies should be developed as a part of our curriculum is a pressing one. Historically, and more or less accidentally, the sociological and socio-economic courses have grown up as part and parcel of the development of the Wharton School. On the other hand, we have no course exclusively devoted to the teaching of business ethics. This want is better met by the handling of ethical aspects of business practice directly as part of the special business courses and of the courses in the sociological group. Every student who goes through a school of business should be brought to an appreciation of social facts that will leave him public-spirited and socially minded. He should have not only an adequate appreciation of the importance of dealing squarely and honestly with other men in individual business relations, but as well a keen sense of the importance of proper living and working conditions for the masses of wage earners. How successfully this social point of view can be impressed within a limited period of instruction it is not easy to say; but it seems reasonable that some instruction looking toward the realization of these ends should be given in every year of the course. So far as the teaching of general social topics contributes to this result, it would seem that these might well be an integral part of the curriculum of any school of business. It is much more doubtful whether the social studies should be allowed to develop in all of their possible ramifications as a part of the curriculum of a school of business. They might better be given the opportunity that belongs to them to grow within one of the more general departments of a university, preferably in the college and graduate schools.

Under the simpler conditions of 75 years ago the old college education enabled men to reach a measure of cultured growth as individuals. It also prepared them practically for those departments of professional activity in which an education was essential to success. It trained the lawyer, the doctor, the professor, the minister, and those who sought education because they had time, money, and inclination, or who went to college merely because they were sent.

It trained them in a peculiar way, a way not now the most profitable. In those days to practice law was to plead before a jury, consisting mainly of honest yeomen,

having impressionable imaginations, but not much power of logical analysis. To be a successful lawyer one needed to have a free and ready speech, a power of striking the imagination, and the logical skill to conceal damaging facts, or to make jurymen forget such facts in the vivid contemplation of those phases of the case that were favorable to the side of the speaker. The old classical education was an admirable preparation for this kind of law practice. The long drill on classical studies gave the student a ready, apt choice of words, it stored his mind with a wealth of beautiful or vigorous allusions, and mathematical study perhaps developed powers of sustained thought and logical analysis. Moreover, in studying the Latin tongue he was using the very instrument the Romans had employed in formulating the legal codes they impressed upon the world with their arms. He was consequently drinking at the fountain of legal terminology and concepts.

But the old condition of things in the legal profession has greatly changed. Jury pleading is largely remanded to the criminal and police courts. The business of law, like other departments of practical life, has been broken up into a number of specialties, to master any one of which now requires a different type of training. Flowing speech, elegant diction, vivid imagination, impressive oratory are no longer the chief requisites of the successful lawyer; instead he needs a keen insight into possible relations that the facts of a case may bear to legal, social, and economic institutions and activities. Such an insight is born only of wide technical knowledge, which can be obtained more quickly, surely, and fundamentally in a college than elsewhere. The cases of the doctor, minister, and professor are analogous to those of the lawyer.

In the old days it hardly paid to be educated for a business career, if business success were the only motive for the education; now the college is a direct road to this end. It is of course possible for a young man to learn to understand the complicated forces that lead to larger success in business without ever seeing a college, but the chances are that he will sacrifice all the incidental benefits such an education may bring a man, only to meet defeat or win merely a partial victory.

The university school of commerce is a modern college. Its function is to stand side by side with the modernized college of arts and sciences in its effort to revivify and extend culture studies, to afford special training, and to yield a clearer insight into the complicated relations of modern life, whether in business, the old professions, or in the broader field of social service.¹

The CHAIRMAN. The next paper is by Prof. Hoke, of Miami University, on "What can the small college do in training for business?"

WHAT CAN THE SMALL COLLEGE DO IN TRAINING FOR BUSINESS?

By GEORGE W. HOKE,
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In this paper "business" is defined as the promotion and administration of affairs, public or private, as a vocation. The "small" college is taken to be a liberal arts college, doing undergraduate work only. It is not the purpose of the paper to formulate a definite system of training for business, but to point out general lines along which it is both desirable and feasible for the small college to operate. Three points are prominent in the discussion:

1. The function of the college is to develop ability in its students to make efficient and versatile response to environment.
2. One-sided response of the college product is due to the fact that experience in business affairs has no adequate representation in the training given by the college.

¹ Cf. "Shall I go to college?" an address delivered by Charles De Garmo, 1892.

3. Certain readjustments are necessary to meet this situation: (a) The organization of a system of academic and vocational guidance. (b) The establishment of functional relations between the various academic departments of the college; (c) the grouping of a series of prebusiness courses.

When one remembers the limitations of the small college, it seems futile to suggest that training for business be introduced into the curriculum. Lack of money and equipment, the small number and restricted interests of the student body, the inelastic entrance requirements and courses of study, and the heavy teaching burden of the faculty present a formidable array of difficulties. In point of fact, however, there is but one real obstacle to the proposition, and that is the conservatism of the faculty. Tradition and vested interests have perpetuated a system that is liberal in name only. Without doubt, most of the problems connected with training for business would prove easy of solution if educational institutions could be induced to bestow upon the living the same quality of attention that they consecrate so faithfully to the dead. Unfortunately, they seem to forget that a college education is nothing more than a means to an end, and that no amount of knowledge, tradition, or academic dignity can ever justify failure to train students to meet the responsibilities of life.

Under a social régime where wants are repressed; where invention and innovation are frowned upon; where custom maintains a static environment while the student endures his prescribed quota of years and examinations; there it is the function of the schools to so conventionalize behavior that the existing order will not be disturbed. But, where the ideal of society is progress, the environment changes constantly, and a Chinese system of education is a conspicuous misfit. The function of the college in our competitive western world is not to formalize conduct for either labor or leisure, but to stimulate ability to make versatile and effective response to the actual environment into which its students must go. Our changing conditions place a premium upon capacity to comprehend new situations, and to meet new responsibilities. There never was a time when the need for progressive adjustment was so insistent as now. Myriad-tongued voices of science, of industry, and of art call to alluring opportunities. Such an embarrassment of riches renders expert and specialized guidance highly desirable in the adventure of life.

To render this service of guidance, the college must provide a selected environment, as representative of human experience, and as rich in variety as its finances will permit. Nor should this be taken to exclude opportunity to profit by the experiences of the past. The life problems of all time should be utilized to the uttermost in our quest for fitness. In fact, new emphasis must be placed upon the truth that no large segment of human experience in the appreciation of achievement or in the conduct of affairs should be left without representation in the college course. But it must not be forgotten that contemporary business conditions have set problems more difficult than any the world ever has been called upon to face. At the same time they furnish a richer body of experience for their solution than any other period can provide.

It is difficult to realize the extent to which business has permeated all walks of life. The good farmer fails if he is unable to administer his farm efficiently, no matter how skillful he may be in cultivation. The minister, out of touch with the conduct of affairs, is helpless to deliver the opportune message and impotent to inspire the consecrated service that man proves himself capable of rendering. The teacher, whose beatitude is culture for leisure, sends his students into the world helpless to win leisure for culture. In the day when birth standardized environment for an endowed aristocracy, it was the function of the schools to train the elect for conspicuous leisure. In these days, however, every man must win his own place in the sun and administer his own affairs. Whether we like it or not, our lines have gone out through all the earth. Absolutely the largest social fact of to-day is, that we are caught in a world-mesh of mutual dependence and business relations. Many of our students engage specifically in business, all of us are dependent for our very lives upon services ren-

dered by business, and the prosperity of coming generations is determined by the economy and efficiency of business administration now. Under these conditions, training for efficient service in business is essential to peace and prosperity, while training for leisure is a vicious anachronism.

For example, we have entrusted the administration of our natural resources to individual enterprise. It is not necessary here to review details of operations, or attempt to place responsibility. It is sufficient to note that we have almost despoiled a continent within a century. At the same time we have altered the living habits of a whole people until the menace to the integrity of human life is no less threatening than the prospect for failure of material resources. We dare not leave this important business of conservation of resources and life to the mercies of the man from the street, no matter how earnest and honest he may be, who, by sheer force of ability, fights his way to the top. On the other hand, it is equally futile to hope that an aimless digression of four years in college, getting ready to do anything in general, and nothing in particular, will be any better guaranty of efficiency and judgment in these matters. In the face of bankruptcy, society must make assurance doubly sure that its interests will be administered by men dominated by ideals of service as unselfish as any college ideals dare be, and as efficient as any industry may dream of securing.

Another aspect of the business world that merits attention is the increasing need for scientific management. This indicates that the machinery of production is being taken out of the hands of the traditional gang-boss, and being given over to the man trained in scientific method and applied psychology. The day of the amateur is passing. Management of extensive business affairs is becoming a profession, because the complex conditions of operation make it increasingly difficult for a man to master all the requirements of knowledge and skill in the actual round of business practice. The college must offer such preliminary training for prospective men of business that they can keep pace with the increasing demands made upon them, or some other institution will be established to perform the required service. If the new institution emphasizes the economics of the situation at the expense of finer ethical considerations, the smug satisfaction of the college in seeing the expected happen will no doubt be gratified, but men of business will see less occasion than ever for a so-called liberal education.

Any lowering of the moral plane, just at this time, would be no less than tragic. Modern business enterprise has so completely changed social relations that a readjustment of our standards of behavior is no less imperative than wise conservation and efficient management. Private business has become a public trust so decidedly that the remark no longer deserves quotation marks. The rules of the game must be altered constantly to meet shifting aspects of duty. It is doubtful if any amount of good intentions may be depended upon to unravel the tangled threads of right and wrong. Nothing short of a passion for goodness and service, backed by a trained intelligence and ripe experience, can undertake to administer our affairs with justice. In view of these considerations, it is evident that training for business is very much more than merely a legitimate undertaking of the college. It is an obligation that dare not be disregarded. So far from being an innovation, it is a revival of the functional responsibility of the college made necessary by the acute maladjustment of its product to life.

Six general qualifications are essential for the efficient conduct of affairs. They are (1) vision, (2) mastery of scientific method, (3) understanding of human nature, (4) capacity for self-expression, (5) capacity for recreation, and (6) capacity for productive service. While these qualifications are by no means peculiar to the demands of business, and while they do not meet its requirements at all in detail, yet they are so comprehensive and flexible as to admit of adjustment to the conditions in any college, however small.

The first requisite for the prosecution of an enterprise is a vision of opportunity. At present, we can not say to what extent this capacity can be developed through training. We do know, however, that vision is not born of ignorance; that it comes to the man who knows. No college is too small to insist that its students acquire, before graduation, specific interest, and general knowledge in some field of contemporary responsibility, as a basis for vision in the selection and conduct of a vocation. If the interest of a student turns toward business, the college should endeavor to give him a training as appropriate to his needs as it gives to any other class of student. If the college is not willing to do this, it is no fit place for that student. This is not to be taken to mean that we have solved the problem of training for business. But it does mean that the will to attack the problem must be in evidence. It is, perhaps, fortunate that we must wait for the specialists in the lines involved to work out ways and means for training with economy and efficiency. Just now we need patience as well as vision. Meantime, however, as a safe approach to the problem, most colleges can offer a limited amount of work in the geography, history, and economics of agriculture, industry, commerce, and related subjects, without serious inconvenience, and to the great enrichment of the curriculum. Moreover, the development of these studies through field and laboratory work in the collection and presentation of data will furnish unrivaled opportunities for the application of scientific methods to investigation.

As society becomes more highly organized, and its operations become more precise the need for mastery of scientific method becomes more dominant. Under simple conditions men may afford to depend upon luck. Under somewhat more complex situations experience may point the way with sufficient accuracy. But for us, those days are past. The chances are all against a guess being correct, or against experience being adequate when new situations arise. All students need generous training in scientific methods of study. To make sure that they will carry these methods into the field of business, the materials of business enterprise should be manipulated, both in theory and in practice where possible. Student activities will furnish no inconsiderable opportunities for actual experience in the conduct of affairs. Doubtless some scheme of part-time cooperation with going concerns could be established, and actual experiences in business given a scientific orientation in the college classes. At any rate, the result of the training should be the development of that habit of suspended judgment, systematic procedure, firm decision, and prompt execution, which marks so conspicuously, the man of affairs.

A study of the fundamental principles of psychology ought to be made early in the college course. If developed from the standpoint of educational and folk psychology it ought to function in the actual process of study, and in the daily relations of the student with his fellows. From one viewpoint we are all of us more or less busy making some sort of an impression. To that extent we are teachers, and employ, consciously or unconsciously, the principles of psychology. More specifically, in these days of large-scale production and exchange, men who understand human nature and industrial processes must teach their fellows. The man who sells goods must know his wares, and be able to educate his customers into wanting them. In addition to the general course in psychology, these men should have the opportunity to take up work in the psychology of management, of advertising, or of salesmanship, according to their special interests and the facilities of the institution which they attend.

In order for a man to make his vision, or his mastery of scientific method, or his insight into human-nature function, he must have enough skill in self-expression to represent himself acceptably in word and deed. As an aid to the mastery of language the study of public speaking has high value. But every class period offers opportunity to gain poise and control along the same line. In addition, practice in presiding over meetings, in giving instructions for the execution of projects, in the writing of advertisements, and in the presentation of selling arguments, are fortunate experiences for those who expect to have responsibility in business. Nor should social

life and athletic activities be underestimated as valuable accessories in the development of self-expression. They should be capitalized by the college, and not, as too often happens, endured as unavoidable evils.

There are two ways to keep the spirit of effort alive within us. One is by the gratuitous exercise of some difficult task daily. The other, complementary to it, is to loaf vigorously upon occasion. Play and appreciation knit up the ravelled sleeve of care as surely as does sleep. Attention becomes first fatigued, then stale, then dead with overstimulation, just as a muscle does with overwork. The ability to hang breathless upon the momentous flight of a tennis ball from your own racket, or to forget time and tide in the appreciation of a book or picture, are assets that make for a long life, and a merry one. People should learn to play with abandon, and to appreciate the good things in the arts of all time. The college should not fail to provide rich opportunities for harmless enjoyment, nor neglect to stimulate the appreciation of music, literature, and other fine arts. While these things should be developed with discretion, they should enter into the training of every man who is to go into business, even more than into the training of a man for leisure. The former needs them more, deserves them more, and no doubt, will enjoy them more.

Capacity for service may well stand as an epitome of all these qualifications for business. But the practical man is likely to consider the ideal of service as visionary, if not sentimental. On the other hand, the college professor is prone to look upon business as selfish and materialistic. It is just because of this gulf, fixed between the academic and the practical world, that the colleges are so lacking in influence, and business so short of vision. A superficial survey of the situation will reveal the fact that the ideals for the conduct of both business and education are badly adjusted to our régime of mutual dependence. The college glorifies the refinements of life, while business is devoted to practical achievement as measured by financial profit. Meanwhile the world is asking for efficient service from each. To be sure, we can not dispense with the stimulus of competition. It is through struggle and achievement that men are made. But, while we recognize that it is trivial to compete for grades in college, it is equally certain that, when the world of business makes the acquisition of power over goods and men the goal of endeavor, the menace to human welfare is too serious to be tolerated indefinitely. Training for business in the small college gives promise of ushering in a régime when men compete, in the area of both education and business, for supremacy in productive service. When that day comes the gain of one will be the gain of all, and the burning question of justice in the distribution of wealth will be well on its way toward solution.

Common observation will show that every conceivable variation in ability along these six lines will be found among students. Owing to these individual differences, the college must accept three responsibilities:

- (1) It must do what it can to discover special aptitudes.
- (2) It must provide training as appropriate to the needs of each individual as it can secure.
- (3) It must endeavor to send its product into a congenial field of opportunity for service.

Fortunately there is no institution so favorably situated to do just these things as the small college. Small numbers, intimate contacts, and limited range of interests are distinct advantages for effective teaching and learning. Certain readjustments are necessary, however, before the small college will be able to bridge the gap between its graduates and the world into which they are to fit.

From the day a boy enters college, the institution should give him sympathetic attention and intelligent advice. The career of a factory would be brief and inglorious indeed, if it permitted men and materials to wander from process to process without direction. No less certainly should the career of the student be routed with reference to his peculiar needs, in so far as they can be determined. Each one should have an

adviser who knows something of men and affairs, and who, above all, is gifted with an appreciative insight into personality. This adviser should be the very antithesis of a perfunctory clerk who assigns classes according to a schedule cut and dried to maintain balance between the various departments of the institution. In a way the college should be an experiment station, where the student, under the eye of his adviser, tries out a wide range of experiences. At the end, each student ought to be headed for some specific field of work for which he has special fitness and interest, be it the law, the ministry, or business. Rank failure is too mild a term to apply to a college when any large number of its students are graduated without having acquired a definite aim in life.

In view of the limitations of the small college, extensive additions to the curriculum are out of the question at present. It is not enough, however, to establish an advisory system. The work of the academic departments must be correlated to meet the standards of quantity and quality set for the final product. The tacit assumption, on the part of the typical college professor, that his main business is to stimulate specialization in his own particular line, is a pernicious inheritance from the university. When any large number of them succeed in their designs, overpopulation and inadequate wages in the academic world are the inevitable results. The attempt is as absurd as the ingenious device of folk, stranded upon a desert island, for making a living by taking in each other's washing. Here and there a student ought to prepare for academic specialization in the university, and a generous amount of time and energy ought to be devoted to him. But the great mass of the students will have interests that are best served by a judicious combination of work from many departments. In view of these facts, departmental self-sufficiency must give place to cooperation. Specific courses must be looked upon as partial processes, and be so conducted that the requirements for the final product will be attained. Moreover, the standard of motivation in each course, whether as prerequisite for other courses or as preparatory to a vocation, should be clearly understood and stated. Under these conditions, both student and adviser will have something more definite than vague tradition to depend upon in the election of college work.

Given a student about to graduate with these qualifications, the question arises, What is the college to do with him? It is easy to bid him Godspeed, and promptly forget him until some contribution is desired. But it seems too bad that there should be any chance for him to miss his calling after the institution has invested so much in him. Somehow, the college ought to be able to capitalize its information concerning its students to the end that they may be placed where they will do the most good. It is futile to send a sick man into the world, and, to avoid that disaster, colleges have wisely instituted physical training and medical inspection. It is an open question whether a misfit is any better. Not long ago a college president said, in essence: "My heart sinks within me when a boy comes into my office for advice as to his career. Who am I that I should presume to interfere with the destiny of a fellow man?" Fortunately, the responsibility can not be dismissed by any such mock modesty. The college has already interfered with the destiny of that boy, in so far as it has molded his capacities and ideals. Otherwise it has failed in its avowed aims. If the college does not know its product, who does? If the college can not place its products on the market to the best advantage of all concerned, who can? The ideal of vocational guidance can not be completely realized, but some intelligent attempt along that line would be refreshing to the innocent bystander.

All of which may sound very well, but no college can make any headway toward responsibility for its output without a faculty responsive to the demands of the world in which we live. If the active cooperation of the college authorities can be secured in training for service in the conduct of affairs, problems of time and money will smooth out like magic. It too often happens that a man is selected for a professorship mainly because he knows enough about some matters of interest, human or

inhuman, to teach. To this inadequate standard must be added vision, mastery of scientific method, understanding of human nature, capacity for self-expression, refinement, and zeal for service. If one man in ten in a faculty of that type has consecrated himself to the task of training men for the business of life, problems of advising, of training, and of guidance will be relatively simple. In such a faculty, interest will be centered in the students and their needs, and not in the classes, except as means to ends. In turn, the world will permit these professors to be human beings, and not denaturalized specimens of humanity. In the course of time it is conceivable that such accessories as degrees, gowns, and even grades may be dispensed with, and that men of ability and experience will place full emphasis upon fundamentals in their attempts to stimulate the capacities and ideals of a high-grade humanity. Without doubt, money in abundance will be forthcoming to finance an educational institution of this type, because the investment will be justified in the eyes of high-minded men of affairs..

Mr. J. L. MCBRIEN. One point made by the last speaker ought to receive attention, especially on the part of those who have had to do with advising young men and young people with respect to their work when they go to a college. I wish that thought could be burned in great letters so as to be seen by those members of faculties who make the mistake of desiring to build up their department for the department's sake, rather than in accord with the need of these young people who come for advice.

It was my privilege to be connected with a great university in the central west for some years. At the time of registration I was in charge of the full-fledged four-year graduates who came to the university. We had about 700 new students each year. When I would put the question, "What college, sir? What college, sir?" some knew what they wanted and would sing out "Six year medicine, six year law, etc." Now, you could classify those very well, e. g., engineering, or agriculture, or school of commerce—but sometimes when they went the round of the college advisers, very often the chancellor had to interfere in behalf of a boy, unless he had enough common sense not to let the deans and advisers impose upon him. I took a bright young fellow from Council Bluffs one day to our chancellor and remarked, "I want you to hear this young man's story," and he said to the chancellor: "There are seven chancellors over there among your deans, and they have all advised me differently. Now, I know what I want. I have talked it over with my father, my teachers, and my advisers at home, who know me better than these men do on first sight, and I desire the privilege of taking the course that I want, and certain things in the course, the electives." The chancellor was favorably impressed with the young man's plea.

Mr. HUGHES. Prof. Hoke has thrown so many bricks into the yard of the institution with which I am connected, I think it perhaps fitting that I should speak somewhat to the question that the gentleman in the back of the room has just raised, namely, the introduction

of young men into the line of study that fits the vocation to which they are looking from the outset.

I think that we have done something to further that end. It may not be the case with all institutions, but with us we know two months before the opening of college of 90 per cent of the students that expect to enter in any college year, who they are and their address. So the dean does not try to force a man into one department or another, as my friend intimated, in order that the professor may do enough work to earn a part of his salary at least, but the administration sends to Mr. A. a letter of which these are the points:

"I know that you are on our prospective entering list for September. . You have no doubt chosen the vocation which you expect to follow in life. I shall be very glad to know of it, and as there are a large number of optional studies, even in the freshman class, in the liberal arts college course, it would be advisable to know this, because they may fit the vocation to which you are looking forward."

In that way the institution is able to enter into correspondence with a man four or five weeks before the opening of college, and in that length of time exchange two or three letters with him and get the young man's point of view before he reaches the contaminating influence of the college chancellor and the professors who have classes to build.

The ACTING CHAIRMAN. The next paper on the program is by Dean James C. Egbert, of Columbia University, on "How to secure properly prepared instructors for colleges and universities in courses in domestic and foreign commerce."

HOW TO SECURE PROPERLY PREPARED INSTRUCTORS FOR COLLEGES AND UNIVERSITIES IN COURSES IN DOMESTIC AND FOREIGN COMMERCE.

By JAMES C. EGBERT,

Director School of Business, Columbia University.

Entering upon the discussion of a subject thus expressed, it will be well for us to examine the phraseology closely and consider just what is implied in the question as to securing teachers in this field of instruction in colleges and universities. The expression "domestic and foreign commerce" may be described in general as standing for the interrelations of trade as maintained at home and abroad. When, however, it is considered as a subject of instruction in our institutions of learning it evidently has a wider significance, inasmuch as it apparently includes the study of business, a term used in its broadest sense. In fact, it would be well, from the point of view of the schools, to modify the title of our theme by substituting the word "business" for "commerce." This may be justified by merely a cursory examination of the courses of study offered under the term "commerce." We find the scope is so wide as to include accounting, banking, insurance—which the Supreme Court has declared is

not commerce—commercial law, commercial geography, stenography, business English, and modern languages.

With our subject thus clearly defined, we must understand that the question implies the study of business and all that is allied therewith as accepted as a part of the curriculum of the American college and university, and regarded as worthy of such acceptance by many important institutions of this grade. We may, therefore, properly consider the development of commercial study in the American college, and then the place it holds in such institutions, both individually and in its relation to other subjects of instruction. In fine, we must study "business" as a matter of instruction before we enter upon the question of supplying competent teachers in this field.

In the course of the last 50 years the growing importance of commerce in our national life led to the development of schools of business, particularly in a number of our larger cities. These at first were private institutions without definite educational standing or correlation. Then followed the organization of high schools of commerce which were intended to meet the demand for the training of youth in business, particularly of those who were unable to give the time for a high-school course unless at its conclusion they were qualified to enter at once upon a remunerative business career, being prepared for their chosen employment through the training they had received in the secondary schools.

The subjects of study in the private business schools and commercial high schools were bookkeeping, simple business law, elements of political economy, banking, stenography and typewriting, courses in English and in some instances French and German. These so-called business colleges and high schools of commerce served a useful purpose, notably in preparing young people for a business career, but particularly in a negative way by indicating the need of training of a more advanced character for minds more mature and better equipped. They have also served to call attention to the seriousness of premature specialization and to the danger of attempting to give a professional or technical education in schools where the students have received no suitable preliminary training. We have observed that in many instances students have been turned aside from a thorough secondary education and have found their educational career prematurely ended, having passed through their technical training before they were prepared and before they were of suitable age. The difficulty such students have met in transferring from the high school to college when opportunity has been afforded them has been most pathetic. There may be a field for the commercial high school for those who see the end of their educational opportunities at this point, but the dangers referred to above are certainly worthy of careful thought and solicitude.

The fact that business has, since the advent of the high schools of commerce, attained importance and dignity as a subject of scientific investigation, has changed the situation completely. Hence these schools are now assuming the same relation to the more advanced schools of business as the technical institutions bear to the scientific schools of collegiate and university grade. How serious, from an educational point of view, would be the introduction of courses in engineering in the early adolescent period, and in the secondary schools.

In considering the origin of the collegiate school of commerce we must not overlook the early recognition in a college curriculum of the subject then known as "political economy." This, regarded as most important for the college student, was the nearest approach to the theory of business which the college of liberal arts was willing to allow within its sacred precincts. The pressure from without in the commercial world was so great that gradually other courses were admitted to the college curriculum—for instance, banking and accounting, which are now open for election by the student in liberal arts—without causing any serious disruption of college educational boards

or heart burnings on the part of advocates of real culture. Still more interesting and impressive is the development of political economy of the old college curriculum into the economics of our graduate schools which has become a great field for scientific investigation and research. Within its scope we now find that "business," or, as some would have it, "applied economics," is taking an important place. This acceptance of commercial subjects in the undergraduate and graduate curricula has served to produce a realization of the need of a more complete and independent treatment, and has led to the establishment of schools of commerce of a collegiate grade, with a period of study varying from three to four years. The highest recognition which courses in business have received is found in the graduate schools of Harvard and Columbia. We must not overlook the part played by the evening schools of commerce in this development. These are, in fact, continuation schools, supplementing the education of the wage earner and aiding him in his calling by instruction in the theory of business.

The Wharton School of Commerce, the New York University School of Commerce, Accounts, and Finance, the Northwestern University School of Commerce, have all found their origin in these evening schools. This, in outline, is the development of this subject as a matter of instruction in colleges and universities.

Let us now consider more closely the actual state of this subject in the higher institutions of learning. The irregularity of development is portrayed and the evidence of a period of transition indicated in the variety of form which marks these collegiate schools of business at the present time. There are three types of these schools in the United States: First, the actual school of commerce, filling the place and time of the college and based upon the preparation of a high school, such as the Wharton School in Philadelphia. The second type recognizes sharply the professional character of the school of business and requires a preliminary college education of two or three years, followed by the professional business training. The Amos Tuck School of Dartmouth College belongs to this type, requiring three years of collegiate training, followed by two years of professional study. The completion of this course is recognized by the degree of master of commercial science. The third type is represented by the Harvard Graduate School of Business Administration, which is purely graduate in character, calling for a collegiate degree for admission, and conferring the degree of master in business administration. These three types of institutions have a great similarity in respect to the subjects of instruction, the only difference being the inclusion, in the case of the schools of strictly collegiate grade, of subjects belonging to the curriculum of the school of liberal arts. There is considerable uncertainty, however, as to the category in which certain subjects belong. In fact, the very irregularity of assignment in this particular is another evidence of the incomplete development of these schools and their transitory state.

Now, in our desire to secure instructors for such schools we must understand that they should exist and be operated for a double purpose—the training of students for a business career, the primary design, and the preparation and equipment of those who are to serve as teachers in the higher institutions for instruction in business—and we may regard as axiomatic the statement that to secure satisfactory instructors in any subject we must provide satisfactory training for students of that subject. From replies to a series of questions sent to administrative officers of 10 important schools of collegiate and university grade it becomes clear that although their courses are not primarily intended for the training of teachers, they are frequently and successfully used for this purpose. In fact, objection is raised to employing separate courses for students intending to become teachers. The opinion, however, is unanimous that attendance on courses in methods of teaching should be required of those who intend to be instructors in this subject of business just as much as for the training of teachers in other branches. The preparation of a greater number of instructors in these subjects is most important and necessary. I use the word "necessary" advisedly, for from

almost every college and university comes the same mournful complaint of the difficulty of securing teachers qualified for this grade of commercial instruction.

Our schools and colleges have turned to the practical business men for help in this matter, and excellent instructors have come from active business life to engage in teaching. But we can not expect the business world to furnish us with teachers from its ranks, for a business career does not fit one for the teacher's chair. It is a rare occurrence to find a business man who can readily become an academic individual, qualified to impart knowledge, even though he may be possessed of this knowledge in a high degree.

It is essential now for us to recognize certain facts that have a bearing on this problem, first, colleges have been preparing men for instructors in high schools of commerce, but only rarely for those of higher grade. Again, graduate students have given themselves to the study of economics and the theory of business and have not been interested in the practical side of the subject. Finally, there is lacking to a great extent the laboratory method, which is indispensable in schools of applied economics, just as it is essential in the schools of applied science.

In view of these facts we would suggest, in the first place, that the endeavor be made to establish very clearly a profession of business and to increase its importance in the estimation of our colleges and universities. In conformity with the best educational tendencies of the times, this will mean the uniform demand for at least two years of college work before a student is admitted to this professional training. The professional schools of business, founded upon at least a partial collegiate course, should form the background in the preparation of the teacher. To this should be added graduate courses which would supply the training in observation and investigation needed for the successful teacher and advanced student. If we accept the view that business is a profession with a very practical side, we must also emphasize the importance of the laboratory of business just as we demand the laboratory for the student of mechanical engineering and clinical courses and hospital practice for the physician. Just what form this laboratory work should assume is still uncertain and must be determined by experience. Business houses may consent to employ students on part time and thus offer an opportunity for them to secure the necessary experience, particularly where the training must be of a special and individual character. The suggestion of cooperation between business establishments and educational institutions offers the most attractive solution of this problem. Practical experience is not indispensable for the teacher, but is, to say the least, desirable.

Colleges of business must be carefully organized and equipped according to an approved plan, and a clear understanding should be reached as to the various departments of specialization necessary in the development of these professional schools. The subject of accounting is already very clearly defined and one may readily specialize in this field. This should be true also of banking, of salesmanship, and of transportation. In other words, just as a student of medicine who prefers surgery as his special branch of study readily discovers and follows the path of attainment in his specialty, so there should be a definite system of training for those who desire to teach banking or transportation or insurance to the end that men may become experts in this field and qualified to instruct others.

Our problem, therefore, is one which admits of solution through regulating, adapting, and developing the agencies which already exist. Business—using the term in its broadest sense and with its widest connotation—must be recognized as a profession and professional training for a business career must be given an important place in our scheme of higher education, alongside of law, medicine, and engineering. When business is accepted as a profession and these schools are recognized as professional schools the attractiveness of this subject for the ambitious teacher will be increased and the dearth of instructors no longer experienced.

In concluding this discussion I should call attention to the fact that we have considered the problem of securing for colleges and universities teachers of business in general and not of any particular subject. We should not, however, neglect the possibility of the interpretation of our theme as bearing upon the special subject of foreign and domestic commerce in its most restricted sense. It is not necessary for me to dwell on the importance of this special question, particularly in view of our growing trade relations with South America. It is vital that the young men in the United States and those of other countries should be trained in a knowledge of the institutions of the various countries with which trade is to be maintained. The following suggestions may be of value in accomplishing this most desirable end. Our institutions should establish and develop such subjects of study as commercial geography, international law, and courses in modern languages, strikingly colloquial in character. We should have courses on the institutions and customs of the various countries, particularly of South America, which is so close a neighbor, and yet, strange to say, most unfamiliar to the American student. Similar reciprocal courses might well be established in the educational institutions of the countries of South America for the benefit of their own and visiting students. Traveling fellowships should be endowed, the holders of which should be required to travel and abide for a certain period of time in these countries so as to become familiar at first hand with their customs and methods in business. Here, again, the cooperation of business firms in different countries would be of great service, for they can give practical training courses in their offices and in their manufacturing establishments which may be employed by young business men and by those who would become instructors in their own countries in foreign commerce.

Finally, those who are to be teachers in this new profession of business must have a thorough general education followed by professional training with the opportunity for specialization and for practical experience. These are essential both for the education of students of business and in the preparation of men who are to teach the subjects of foreign and domestic commerce.

The CHAIRMAN. The paper of Dr. Grinfeld on "El comercio moderno y las nuevas orientaciones de la enseñanza comercial" will be presented at this point as read by title.

EL COMERCIO MODERNO Y LAS NUEVAS ORIENTACIONES DE LA ENSEÑANZA COMERCIAL.

Por ISAAC GRINFELD,

Ex-Director en Buenos Aires de la South American Branch International Correspondence Schools (of Scranton, Pa.).

OBSERVACIONES PRELIMINARES.

La gran expansión del comercio moderno es un hecho que nadie que conozca algo de historia económica, pondrá en duda. En efecto, las manifestaciones de este fenómeno son tan palpables que no escapan siquiera la atención de los menos avisados. No se trata ya hoy día de los vínculos locales, íntimos por cierto pero a la vez restringidos, característicos de la edad media. El desarrollo admirable de la industria y los medios de transporte y comunicación en tiempos recientes, ha causado en el comercio una verdadera revolución; de asunto local se ha convertido en fenómeno mundial. Este cambio ha impuesto necesariamente una alteración en los métodos comerciales, los cuales han ido perfeccionándose a medida que la industria evolu-

cionaba, hasta que en la época presente ha llegado a ser considerable el contraste entre los sistemas de hogar y antaño.

El alto alcance social de las actividades comerciales es quizás el más notable rasgo de la evolución moderna. En la actualidad no se considera el comercio como una ocupación sin mayor importancia. Antes por el contrario, la tendencia es atribuirle cada vez mayor significación; y esto no es extraño, pues la experiencia ha demostrado de una manera concluyente la honda repercusión social de los fenómenos que colectivamente asociamos con el término comercio.

Como es natural, estos fenómenos se complican constantemente en proporción a la magnitud del progreso económico realizado, y su estudio resulta más complejo a causa de las múltiples acciones y reacciones que implican. No obstante, fundamentalmente el comercio es hoy día, como lo ha sido siempre, el intercambio de productos y servicios, fenómeno de por sí bastante sencillo, que, en principio, no presenta dificultades científicas de consideración.

Mas no es precisamente en la esencia del fenómeno básico donde radica el interés primordial del asunto, sino en el majestuoso mecanismo que andando el tiempo ha elaborado la humanidad con tan infatigable celo. Ciertamente es que ahora, como antes, se cambian unos por otros productos y servicios; pero ¿cómo se verifica este intercambio? ¿qué resortes se ponen en juego? ¿qué factores intervienen y cómo obran? ¿qué influencias ejercen sobre el organismo social en conjunto y cómo reacciona éste? He ahí cuestiones de actualidad.

Los límites de este trabajo apenas permitirán enunciar algunos problemas de grande importancia en los tiempos presentes. No es, por otra parte, nuestra intención estudiarlos aquí minuciosamente, sino establecer las orientaciones que en la enseñanza comercial imponen.

EL COMPRADOR EXPERTO.

Dos, por lo menos, son los que intervienen en una operación cualquiera de intercambio: el comprador y el vendedor. El uno cambia dinero por mercancía, y el otro trueca mercancía por dinero. Ambos están interesados en realizar lo que comúnmente se llama "un buen negocio"; es decir recibir en cambio de lo que dan algo que estiman de mayor valor personal, si se trata de artículos de consumo, o de más alto valor social, si son artículos que compran para vender. La compra-venta envuelve el proceso irreducible del comercio moderno, y el comerciante es a la vez comprador y vendedor, según las circunstancias; de consiguiente, para lograr buen éxito, deberá unir a la pericia como comprador la habilidad como vendedor.

Por lo general ambas aptitudes son del dominio de los expertos comerciantes, pero el gran volumen de las transacciones modernas ha rendido indispensable el relegar a distintos empleados las funciones de compra y venta reservándose el jefe de la empresa o el dueño la coordinación entre ellas.

El puesto de comprador en los grandes establecimientos es de alta significación, pues de las operaciones que en el desempeño de ese cargo se realizan depende en gran parte el éxito o fracaso del negocio. El comprador es persona entendida, técnica, que conoce a fondo los diversos artículos del ramo y sus valores respectivos. Es él quien vigila la calidad de las mercancías que la casa adquiere para vender a sus clientes, y quien se encarga de obtenerlas al precio más bajo posible.

La demanda de compradores expertos está en constante aumento, ya que emana de una necesidad genuina en el mundo mercantil. Corresponde, por tanto a los institutos de enseñanza comercial, proveer los medios de satisfacer esta demanda y se suscita desde luego la cuestión acerca de cómo pueden estas instituciones contribuir a la preparación del experto comprador tan buscado por razón de su misma utilidad.

Pericia en el ramo es evidentemente requisito esencial del experto comprador. Hasta hace relativamente poco tiempo se creía, y en algunas partes se sigue creyendo

aún, que dicha pericia puede adquirirse tan solo mediante un largo aprendizaje a base de observación directa y personal durante un gran número de años. No queremos de ningún modo menospreciar el valor de la experiencia personal; fuera ridículo hacerlo; pero sí deseamos señalar aquí que el método referido es demasiado tardío para corresponder a las exigencias modernas. Hoy día no es posible invertir toda la vida de un hombre para hacer de él un comprador más o menos competente en uno o varios ramos. Es preciso que en unos pocos años, a lo sumo, llegue a ser apto; y esto se puede conseguir con la ayuda de la ciencia.

Efectivamente varios establecimientos de enseñanza comercial han inaugurado cursos denominados de Tecnología Comercial basados en la química industrial, la mecánica aplicada y la electricidad práctica; pero esta iniciativa aunque plausible, no ha producido hasta la fecha los resultados halagüeños que eran de esperarse. El fracaso parcial de estos ensayos no prueba, sin embargo, la incapacidad de la ciencia para lograr el objeto propuesto.

Consiste la dificultad en que al emprender esta clase de enseñanza, las instituciones referidas descuidaron que los mismos conocimientos, y hasta más completos, podían adquirirse ventajosamente en institutos tecnológicos, escuelas industriales, etc., mucho mejor equipados para impartir esa instrucción. Y sucedió lo que debía suceder. Los alumnos salidos de estas últimas instituciones estaban mejor preparados y la competencia pronunció su fallo inexorable.

Conviene no confundir la enseñanza técnica comercial con la enseñanza técnica industrial. Opino que cada institución debe tener su esfera propia y que cualquier desviación de ella produce inevitablemente un derroche de energías y dinero. Lo que la época moderna reclama con justificada insistencia es la coordinación de la enseñanza. Si para preparar debidamente al comprador experto hay que enseñarle química, enséñesele en hora buena, pero ¿qué necesidad lógica existe para que con ese objeto se inaugure un nuevo curso de dicha materia en una institución de enseñanza técnica comercial, si por ejemplo, ya se dicta uno semejante en otra institución de enseñanza técnica industrial? De manera similar, si el hombre de negocios del porvenir tiene que conocer el derecho mercantil, ¿por qué no habrá de aprenderlo donde lo estudia el futuro abogado?

La pericia necesaria al experto comprador pueden impartirla un sinnúmero de instituciones existentes sin recargo para los presupuestos y sin que los institutos de enseñanza técnica comercial se aparten de su esfera propia de acción. Si el comprador experto, según las necesidades del país, ha de conocer, por ejemplo, todo lo relacionado con el trigo, el maíz, los ganados o cualesquiera otros productos de índole similar, deben enseñárselo los institutos de enseñanza agrícola o agro-pecuaria, y si no los hay, deben fundarse, estableciéndose en ellos los cursos respectivos; si el experto comprador necesita conocimientos de química pueden impartírselos los establecimientos de enseñanza industrial, y si falta le hicieren conocimientos de mecánica, electricidad o abogacía, las facultades de ciencias exactas o de derecho son las indicadas para suministrárselos.

La época moderna es por excelencia una era de especialización. No se puede ser experto en todo; y no vale gran cosa hoy día saber un poco de todo; se exige más bien que se sepa todo de un poco. No existen en rigor muchas personas que conozcan varios negocios a fondo. Es pues procedente crear oportunidades para que quienes lo deseen puedan adquirir durante el período de su preparación los conocimientos técnicos necesarios para determinado propósito; y esto, en mi sentir, puede realizarse convenientemente en la forma que dejamos indicada.

¿Quiere esto decir que en la preparación del experto comprador no habrán de intervenir los institutos comerciales? De ningún modo. A ellos les está reservada una misión de orden transcendental. ¿Bastan acaso sólo conocimientos de agronomía para preparar al experto comprador de trigo? Ciertamente no. La organización del comercio mundial, la naturaleza de la demanda en general y del trigo en particular,

las fluctuaciones de los precios, las causas a que obedecen, el costo de producción absoluto y relativo y los factores que lo afectan, como asimismo las tendencias económicas más remotas, son temas cuya importancia, desde el punto de vista del comerciante, exceden a la mera determinación, por ejemplo, de la calidad y procedencia de los granos, porque el experto comprador de trigos debe ser necesariamente mucho más que un simple conocedor del artículo; tiene que saber adquirirlo de tal suerte que su venta resulte ventajosa.

A mi modo de ver, los países hispano-americanos están dedicando en sus escuelas e institutos de enseñanza comercial demasiada atención al aspecto legal e industrial del asunto, y muy poca al aspecto económico que es, al cabo, el más importante mirado desde el punto de vista real de esas instituciones. Menos abogacía y más economía es la fórmula que se impone.

Especializándose más en los problemas estrictamente económicos, pueden los institutos de enseñanza comercial contribuir en una forma eficaz a la preparación de compradores expertos. Lo esencial es que se dediquen estos establecimientos al estudio intensivo de la ciencia económica, pero esforzándose porque ese estudio sea práctico, de inmediata aplicación a los hechos cotidianos. No se consigue el objeto propuesto enunciando la teoría del asunto, por más correcta que ésta sea, si se deja al alumno que haga sus propias aplicaciones. Los más graves desatinos se deben a menudo a equivocadas interpretaciones de principios enteramente correctos.

Inculquense al alumno principios tan exactos como permita el estado actual de la ciencia económica, y ya que para esta enseñanza no se puede disponer de un laboratorio como para la física o química, por ejemplo, utilícese abundantemente la estadística, esa inagotable fuente de datos que bien ordenados e interpretados tanto enseña. No son los hechos que importa conocer por lo que en sí significan sino en sus relaciones recíprocas.

La verdadera ciencia no es sino la experiencia propiamente destilada; es el resumen del saber humano expresado en leyes y tendencias de aplicación general a fenómenos dados. El experto comprador, aunque en forma inconsciente, procura a diario descubrir las leyes y tendencias que rigen sus propios negocios; y un sistema de instrucción que le enseñe cómo efectuarlo acertadamente y le dé práctica en el procedimiento durante el período de preparación será de positivo beneficio.

También pueden los institutos de enseñanza comercial facilitar la preparación de expertos compradores impartiendo sólidos y detallados conocimientos acerca de las fuentes de producción mundial, la organización mercantil y el consumo social, temas tratados desgraciadamente en la mayoría de los casos con harta superficialidad.

En los Estados Unidos de Norte América, donde los altos estudios comerciales han llegado a su más culminante desarrollo, se han puesto ya en práctica algunos de los principios aquí expuestos, con excelentes resultados. ¿Es su aplicación factible en los países hispano-americanos, y darán también en ellos resultados halagadores? El porvenir lo dirá.

EL PERITO EN PUBLICIDAD Y EL HÁBIL VENDEDOR.

Siendo poco lo que se produzca, poco será lo que haya para vender, quiere decirse que el volumen de la producción determina la magnitud del intercambio. De una manera similar, siendo poco lo que se venda, poco será a la larga lo que se produzca; lo cual significa que, a su vez, la magnitud del intercambio determina el volumen de la producción. El intercambio y la producción son, pues, factores correlativos y actúan y reaccionan el uno sobre el otro.

Ahora bien, tanto el concepto de producción como el de intercambio presuponen el de la demanda; luego cabe preguntar si se producen las mercancías que se demandan y en la cantidad demandada; o se demandan las que se producen y en la cantidad producida. En otros términos: ¿se produce un artículo porque se vende o

se vende porque se produce? Esta pregunta parece puramente teórica; sin embargo su importancia práctica es considerable.

No hace mucho decía un hábil jefe de empresa, refiriéndose a ciertos artículos: "Pocos son los que se compran; muchos los que se venden." Lo cierto es que en la actualidad la vasta mayoría de los productores no esperan, para disponer de sus productos, a que los clientes vengan a comprarlos, sino que van hacia ellos a ofrecérselos en venta con el fin de inducirles a que los compren. Dada la generalidad de este procedimiento, el productor ha llegado a ejercer una gran influencia sobre la demanda, al punto que no se incurre en exageración al afirmar que en la actualidad más se vende porque se produce que viceversa.

En efecto, el sistema moderno de ventas constituye una de las maravillas de nuestra era, y más que ningún otro elemento, ha contribuido al ensanche de los horizontes industriales, abriendo nuevos mercados e intensificando los consumos en los ya existentes. La gran competencia que prevalece en la época presente ha impulsado esta nueva actividad a un grado de desarrollo tal que por útil que sea hoy día una industria, está destinada al fracaso si no dispone de un sistema adecuado de ventas.

Los más hábiles comerciantes reconocen la necesidad de hallar cada vez mayor salida a sus productos y no escatiman esfuerzos para acrecentar la demanda de ellos con el fin de multiplicar las ventas. Lógranse, por lo general, estos propósitos mediante acertadas campañas de propaganda convenientemente secundadas por bien adiestrados cuerpos de hábiles agentes vendedores. La organización debida de estas actividades es uno de los problemas de importancia vital en el comercio moderno.

Cómo confeccionar los correspondientes planes y llevarlos a cabo son conocimientos indispensables al comerciante progresista, que los institutos de enseñanza comercial están indudablemente destinados a suministrar. Hasta la fecha, muy poco han realizado en este sentido los países de Hispano-América, acaso por las dificultades aparentes del asunto. Los cursos preparados por las "International Correspondence Schools" y el "Alexander Hamilton Institute," ambos de los Estados Unidos, demuestran que los obstáculos no son del todo insuperables. Aunque está muy difundida la propaganda en Sud América, el elemento de afición, en contraste con el de profesión, abunda aún demasiado en ella. Muchos miles de pesos se pierden cada año debido a la incompetencia de los que se hacen pasar por expertos en publicidad. Grandemente podrían los institutos de enseñanza comercial contribuir al progreso de sus respectivos países estableciendo cátedras de publicidad científica dictadas por especialistas para preparar verdaderos expertos en la materia.

El puesto de jefe de propaganda en los grandes establecimientos es uno de los más importantes y mejor remunerados, pero escasean las personas capaces de desempeñarlo competentemente. Preparando genuinos expertos en publicidad dignificarían los establecimientos de enseñanza comercial una profesión que está muy en boga, llenando al mismo tiempo un vacío hondamente sentido. El concepto que de esa profesión se tiene en los países sudamericanos es del todo satisfactorio: por lo cual urge la iniciativa institucional a fin de evitar el desprestigio que una inacción prolongada acarrearía inevitablemente.

Forman parte integrante del moderno sistema de ventas, cuerpos de agentes cuya misión consiste en aprovechar debidamente el interés de parte de los futuros clientes que los productores se esfuerzan en despertar mediante bien dirigidas campañas de publicidad. El éxito colectivo de estos verdaderos ejércitos depende naturalmente de la habilidad individual de cada uno de sus elementos componentes; y así se procura reclutarlos con los que ofrecen mejores probabilidades de realizar una acción eficaz.

La falta casi absoluta de hábiles vendedores en los países latinoamericanos, es notoria y constituye uno de los más graves obstáculos con que han tropezado para desarrollar sus negocios de reconocida utilidad gran número de empresas, que en otras partes del mundo no han hallado casi ningunas dificultades en este sentido.

Considerable es, en efecto, el contraste entre la escasez de vendedores expertos aquí y su relativa abundancia en los Estados Unidos. Me inclino a creer que el concepto poco halagador que se tiene en estas regiones del vendedor, y la ausencia absoluta de instituciones dedicadas a la enseñanza de la profesión que él encarna, explica este fenómeno.

El prototipo del vendedor en los países hispano-americanos es el corredor, mal visto, y en muchos casos, con fundamento. Componen el gremio individuos de escasa o ninguna preparación y de habilidad a lo sumo mediocre. Quien no sirve para otra cosa dedícase, por lo general, al corretaje. ¿Qué puede esperarse de elementos semejantes? Los míseros resultados que casi siempre obtienen, y la existencia precaria que están obligados a pasar en la mayoría de los casos, es indicación clara de un orden de capacidad muy reducida. Convertir mediante una adecuada preparación en hábil vendedor al simple corredor y elevar el oficio de éste al nivel de verdadera profesión son obligaciones que deben imponerse las instituciones de enseñanza comercial.

Al magnífico éxito comercial logrado en los Estados Unidos ha contribuido sin duda grandemente la espléndida organización del sistema de ventas. En muy alto concepto se tiene allá la profesión del vendedor, a quien se considera, como en rigor lo es, un educador que procura beneficiar al público colocando a su alcance las últimas producciones del progreso moderno, al propio tiempo que se beneficia a sí mismo. Su labor es enteramente digna y constantemente aumenta la consideración social que se le dispensa. Desgraciadamente no sucede aún otro tanto en los países de Hispano-América.

La dignidad del cargo de vendedor es un concepto que los institutos de enseñanza comercial deben inculcar a sus alumnos. Habrá agentes cuya misión no sea digna de encomio porque ofrezcan en venta no sólo cosas inútiles sino hasta perjudiciales, pero el verdadero vendedor, el que hace ver cómo una sentida necesidad puede convenientemente ser satisfecha, merece los mejores elogios.

La gran utilidad de los servicios del genuino vendedor en los tiempos modernos es evidente, si se considera que en nuestra época de competencia intensa ya no puede existir la pasividad comercial de antaño, basada en la suposición, quizás correcta entonces, de que los que tenían algo que vender y los que ese algo necesitaban llegarían naturalmente a encontrarse y satisfacer sus mutuos deseos. En la actualidad es el vendedor quien sobrepujando la inercia y la apatía contribuye a impulsar la humanidad constantemente hacia el progreso económico y social. Se venden, por ejemplo, muy pocas pólizas de seguros, que los mismos interesados hayan ido a comprar por propia iniciativa; sin embargo, miles de viudas y huérfanos tienen que agradecer al agente que demostró al padre o hermano la necesidad de asegurar su vida. De una manera similar, muy pocas máquinas de escribir y calcular se habrían vendido sin un servicio apropiado de agentes. Se han abierto camino hoy día estos aparatos entre las personas de tendencias ultra-conservadoras debido principalmente a la convicción que los vendedores han sabido impartir al público acerca de su eficiencia y economía.

Bastante generalizada es la idea de que el buen vendedor nace tal, y que poco o nada vale la instrucción que sobre su oficio puede suministrarse. Ahora bien, sin duda quien posea dotes especiales alcanzará mayor perfección en el arte de vender que quien no esté así dotado; pero cometen ciertamente un error los que creen que no es provechosa absolutamente la enseñanza de este arte. Lo mismo tendría que decirse desde luego de la enseñanza de la música, de la pintura, etc.

La experiencia ha demostrado las grandes ventajas prácticas de las escuelas de adiestramiento para vendedores (salesmen's training schools) que forman parte integrante del sistema de ventas de las más grandes y mejor organizadas empresas de los Estados Unidos. La mayoría de las casas que necesitan emplear numeroso personal de ventas tienen establecidas escuelas propias donde los aspirantes son sometidos a rigurosa disciplina pedagógica durante cierto tiempo, al cabo del cual rinden un

examen práctico y si resultan aprobados reciben el nombramiento para el puesto solicitado. Las compañías acreditadas cuidan afanosamente de su reputación, y ya que el concepto que de ellas se forma el futuro comprador depende de la impresión que hacen sobre él sus vendedores, no se tolera que un agente incompetente represente la empresa.

En estas escuelas se dedica considerable atención a la enseñanza del ramo particular de la empresa, puesto que es de importancia fundamental que el vendedor conozca a fondo el artículo que va a ofrecer. No obstante, en todas ellas se inculca además a los alumnos una serie de principios relativos al arte de vender, de aplicación general e invariables, fuese el negocio el que fuere.

He aquí a mi modo de ver, una excelente oportunidad; no para que los institutos de enseñanza comercial compitan con las escuelas de las empresas privadas, sino para que les proporcionen materia prima casi totalmente elaborada en la forma de educandos que tengan ya los conocimientos fundamentales y a quienes para convertir en hábiles vendedores sea necesario tan sólo enseñar los rudimentos del ramo particular de que se trate.

EL JEFE DE EMPRESA.

Sin duda alguna el lucro es el incentivo principal de todo comercio; el intercambio de unos artículos por otros o por servicios o entre sí sin la idea de ganar, ciertamente no caracteriza la generalidad de las operaciones mercantiles modernas. Cuanto mejores probabilidades de realizar ganancias ofrece un negocio tanto más atrayente se le considera, puesto que lo que asiduamente busca el comerciante es obtener beneficio. Pero no es por supuesto el provecho absoluto sino el relativo que más le concierne, y así el propósito que persigue es el de lograr el máximo de rendimiento con el mínimo de gasto. Cómo conseguir este resultado es el problema comercial por excelencia que los jefes de empresa tienen necesariamente que resolver en forma satisfactoria.

La ciencia económica ha demostrado que el secreto de la solución de este problema estriba en la debida coordinación de los elementos componentes del negocio; por lo cual la habilidad organizadora constituye evidentemente el más indispensable requisito del jefe de empresa. Todo comerciante reconoce que la buena organización es de decisiva transcendencia para el éxito de cualquier negocio. A nadie escapará, sin embargo, que la buena marcha de la empresa es igualmente de importancia fundamental. Menester es, pues, que el jefe de empresa además de habilidad organizadora posea capacidad administrativa, o ejecutiva, como suele llamársele.

Del mismo modo que se requiere talento para el cultivo de cualquiera de las altas manifestaciones del ingenio humano, el desempeño competente de las funciones de organizador y administrador exige una habilidad extraordinaria, que, descontando los requisitos personales indispensables, pueden en gran parte impartir los institutos de enseñanza comercial. La preparación de peritos organizadores y administradores representa, en efecto, la más elevada misión que estos establecimientos están llamados a realizar, constituyendo el éxito de sus graduados el más alto exponente y la medida del mérito y eficacia de su enseñanza.

Si bien la habilidad organizadora y la capacidad administrativa representan funciones complementarias, los conocimientos mejor indicados para la una son de un orden distinto que los más a propósito para la otra. El organizador necesita conocer los principios generales referentes a la acción de las fuerzas económicas que directa o indirectamente afectan el negocio de que se trate, siendo la preparación de mayor eficacia para él la que le habilita para relacionar los elementos en armonioso conjunto. Para ello nada hay más apropiado que un estudio concienzudo de ciencia económica con trabajos prácticos intensivos sobre organización mercantil. El administrador, por otra parte, aunque también necesita estar versado en los principios generales mencionados, ha menester principalmente de una serie de conocimientos técnicos de aplicación inmediata a la empresa. El administrador es por lo general el técnico, el experto en

el ramo y el entendido en el movimiento cotidiano del negocio, cuyos detalles tiene que dominar. Pericia en la contabilidad y en la rutina oficinista o práctica de escritorio son indispensables al administrador que aspira lograr halagüeño éxito en su trabajo.

Puesto que el jefe de empresa tiene que ser excelente organizador y a la vez buen administrador, como ya se ha dicho, se impone en la enseñanza comercial un plan combinado. La instrucción no debe ser demasiado teórica ni exclusivamente práctica. Excesos de teoría producen soñadores incapaces de resolver satisfactoriamente los problemas que en la práctica se presentan. Del mismo modo, una enseñanza práctica en demasía crea espíritus rutinarios intransigentes de estrechos horizontes y poco alcance, que sólo saben ejecutar lo que otros les mandan, y eso no siempre bien. Los institutos de enseñanza comercial no deben pecar por exceso de teoría ni de práctica; sino más bien demostrar su habilidad organizadora combinando en armonioso conjunto los conocimientos teóricos y prácticos indispensables al moderno jefe de empresa.

LA MISIÓN DE LOS INSTITUTOS DE ALTOS ESTUDIOS COMERCIALES.

Conviene notar aquí la diferencia entre la índole de la labor educativa propia de las escuelas preparatorias y la de los institutos de altos estudios comerciales. El objetivo principal de las primeras es formar competentes auxiliares de comercio; y el de los segundos, preparar expertos compradores, peritos en publicidad, hábiles vendedores, organizadores experimentados, eficientes administradores y, en general, excelentes jefes de empresa. Si bien es sensible que las escuelas preparatorias hayan interpretado tan estrechamente las funciones del auxiliar de comercio, al punto de limitarlas a las del simple oficinista, el trabajo que ellas efectúan merece alto elogio, pues han contribuído, sin duda, al progreso comercial de estos últimos tiempos suministrando, no verdaderos peritos mercantiles como reza el diploma de muchos de estos establecimientos, sino tenedores de libros, corresponsales, estenógrafos y mecanógrafos más o menos idóneos. La índole compleja de los negocios modernos reclama, sin embargo, un grado más alto de instrucción de lo que las escuelas preparatorias están capacitadas para suministrar. De ahí que institutos de altos estudios comerciales, diferentemente equipados, se hayan fundado con creciente frecuencia en la última década. Las orientaciones que rigen a estos establecimientos, aunque han pasado ya del estado embrionario hállanse aún en la etapa experimental. Es de urgente actualidad fijar la esfera de acción de estas instituciones y establecer definitivamente las normas que habrán de adoptarse.

Sean los que fueren los principios sobre los cuales haya opiniones divergentes, difícilmente se pondrá en duda la necesidad de emprender el asunto desde el más amplio punto de vista. La estrechez de concepto conduce directamente al dogmatismo, infranqueable barrera contra la cual se han estrellado casi siempre las más brillantes iniciativas en el campo de la educación. Los fenómenos y actividades que en el término comercio involucramos, son de un orden estrictamente científico, y ejercen una gran influencia social. Su estudio exige, en consecuencia, alta cultura y elevadas aspiraciones.

Podemos considerar el carácter general de la enseñanza que los institutos de altos estudios comerciales deben suministrar, bajo dos de sus fases principales, a saber: la fase social y la fase pedagógica. Desde el punto de vista sociológico es menester compenetrar al alumno ante todo de que el comerciante representa una entidad social y que si bien el lucro constituye su principal incentivo le es dado obtenerlo tan sólo en virtud del orden social existente. El comerciante tiene obligaciones no solamente para consigo y para con sus clientes sino también para con la sociedad. Ojalá nuestros hombres de negocios tuvieran esto siempre presente y obraran de conformidad. Los conflictos tan crueles y comunes hoy en día entre capitalistas y obreros no tendrían entonces razón de ser y desaparecerían, siempre por supuesto que ambos bandos estuviesen animados de unos mismos sentimientos de concordia y justicia.

Así como la escuela primaria inculca en el corazón del niño esos hondos ideales de patriotismo que imperan en el alma del verdadero ciudadano, así los institutos de altos estudios comerciales deben arraigar en la mente de sus alumnos esos sentimientos de rectitud y equidad sin los cuales la armonía económica es irrealizable y el civismo sólo una ficción. Se impone necesariamente una actitud docente que enseñe a respetar como sagradas las promesas hechas e ineludibles los compromisos contraídos, así como a observar, no la palabra de la ley sino su espíritu justiciero. Desgraciadamente está demasiado generalizada todavía la idea de que la mejor transacción es la que beneficia a una sola de las partes. El aprovecharse de la debilidad o ignorancia del público para cobrar por un artículo no su justo valor sino un precio excesivo, y el regateo, verdadero anacronismo mercantil, con la gran pérdida de tiempo y la falta de seriedad que implica, son asimismo prácticas bochornosas harto comunes, cuya eliminación deberían procurar los institutos de altos estudios comerciales por todos los medios a su alcance.

Mirada desde el punto de vista pedagógico, la disciplina mental ha de ser el objetivo primordial de la enseñanza en esas instituciones. No obstante, cierta base de conocimientos concretos es indispensable, puesto que el razonamiento no consiste al fin de cuentas sino en relacionar los hechos mismos. Hay que recordar siempre que los hechos no revisten su verdadera importancia sino cuando se les considera en sus relaciones más remotas. Enseñar a los alumnos de los institutos de altos estudios comerciales a observar los fenómenos que les conciernen, relacionarlos entre sí y verificar las conclusiones confrontándolas con los hechos, equivale en mi humilde opinión a suministrarles el bagaje mental más precioso de que se les puede dotar.

Pero no habrá de ser ésta una enseñanza teórica, sino eminentemente práctica. No será el profesor quien haga el trabajo sino los alumnos guiados por él. Si nota que sus discípulos no observan correctamente los fenómenos que se proponen estudiar, debe indicarles el error, de tal suerte que no vuelvan a cometerlo; si razonan imperfectamente les explicará en forma concreta a qué se debe la incorrección, mostrando al mismo tiempo el método certero; finalmente, si ve que la verificación de los hechos es parcial, o adolece de cualquier otro defecto, lo señalará, sugiriendo la manera de sobrepujar el inconveniente, y de evitarlo en lo sucesivo.

El profesor será en todo tiempo un guía para encaminar debidamente al educando. No hay mejor modo de aprender a hacer algo bien, que haciéndolo. Si los alumnos de los institutos de altos estudios comerciales habrán de ser beneficiados con la instrucción que se les proporcione, deberá enseñárseles durante todo el período de su aprendizaje a resolver problemas idénticos a los que más tarde se les presentarán en la práctica cotidiana de su labor.

El método del seminario, correctamente adoptado a los altos estudios comerciales favorece sin duda grandemente la aplicación de los principios aquí enunciados. Por más que hasta la fecha no se han obtenido aún los resultados que eran de esperarse, me permito afirmar que en la mayoría de los casos la dificultad no consiste en el método sino en su aplicación defectuosa.

Para que el seminario de los institutos de enseñanza comercial tenga verdadero mérito, menester es que se organice a base de laboratorio y se realicen en él los ideales que venimos exponiendo. La estadística brinda material en abundancia y espera paciente en gruesos volúmenes imperturbados por el polvo y los años, a que alguien venga y los obligue a revelar los secretos que tan afanosamente guardan. La ciencia en su constante marcha hacia la perfección necesita valientes exploradores de lo desconocido para ayudar a descender el profundo velo que pesa aún sobre la mayoría de los fenómenos y actividades económicos. Los institutos de altos estudios comerciales son los indicados para suministrar los reclutas.

The CHAIRMAN. In the absence of Dr. Araya Bennett, director of the Commercial Institute of Valparaiso, Chile, the following paper will now be presented before adjournment, as read by title:

PREPARACIÓN PARA LA CARRERA COMERCIAL EN CHILE; PUNTO DE VISTA LATINOAMERICANO DE LA ENSEÑANZA COMERCIAL.

Por FRANCISCO ARAYA BENNETT,

Director del Instituto Comercial de Valparaiso, Chile.

La independencia de las naciones hispano-americanas fué un movimiento que cambió por completo el estado en que se hallaban como dependencias españolas. Mientras la independencia no significó para los Estados Unidos más que una lucha en favor del mantenimiento del gobierno por sí mismo de que disfrutaban y contra el cual atentó un ministerio inglés, en la América española el gobierno propio era desconocido y tuvo que crearse preparando al pueblo, ventajosamente, para comprenderlo y para ejercerlo. Esta sección de la América era legislada y administrada desde la península hispana y, desde allá, el rey designaba a los gobernantes y empleados, y disponía cuánto aquí debía hacerse y pensarse.

Pasar del absolutismo colonial a la democracia republicana, no era la obra de un momento y no podía realizarse sin sobrellevar hondas perturbaciones, ni sin errores y transtornos muy explicables.

En el lejano Reino de Chile, los libertadores comprendieron, desde el primer instante que el mejor medio de cimentar sobre sólidas bases las instituciones republicanas consistía en difundir la instrucción que prepara al ciudadano y que debe alcanzar lo mismo al letrado, a quien gradúa la universidad, que al agricultor, artesano, minero, comerciante o industrial, a quien guía la necesidad apremiante de la subsistencia o la esperanza de la fortuna.

En el año 1813, el nuevo gobierno fundó en Santiago de Chile el Instituto Nacional que hoy, más que centenario y rico en tradiciones, ocupa aún el primer rango entre los planteles de enseñanza secundaria del país. En el expediente parlamentario de su fundación se hallan muy bien expuestas cuáles eran las ideas que en aquella época animaban a los padres de la República respecto a la extensión que debiera abarcar la instrucción nacional. Según ellos, el nuevo plantel debería comprender todas las ciencias sagradas, naturales y civiles o, como lo expresa en su informe el rector del colegio carolino, el instituto estaría destinado a ser "una escuela universal donde se formen el eclesiástico, el abogado, el estadista, el magistrado, el caballero, el artesano, el médico, el minero, el comerciante; en una palabra, el que desee ser útil a sus semejantes y a sí mismo."

Los recursos pecuniarios e intelectuales de que disponía Chile no permitieron que tan vastos planes se realizaran en su totalidad y, después de la reconquista española, al afianzarse la República con las victorias de Chacabuco y Maipú, el Instituto Nacional especializó su acción con los caracteres de plantel de enseñanza secundaria general, preparatorio de la enseñanza universitaria y, hasta que la universidad no se abrió como institución aparte (1844), tuvo también una sección universitaria que se segregó e independizó de él, así como después se le ha segregado el internado para formar un nuevo colegio que lleva el nombre de uno de sus más ilustres rectores: "Internado Diego Barros Arana."

La Universidad de Chile ha sido aquí, desde su fundación, el centro de la vida intelectual del país y, lograr sus honores y merecer sus grados, la aspiración más acariciada por la juventud chilena. Los laudables propósitos de atender a la pre-

paración de las demás actividades juveniles se retardaron tanto por el buen éxito y por el brillo de aquella institución cuanto por la estrechez del erario, principal y, durante mucho tiempo, casi el único sostenedor de la enseñanza nacional.

Durante la administración del Presidente Balmaceda (1886-1891), la primera que se vió libre de las preocupaciones de la guerra contra el Perú y Bolivia (1879-1881 y 1883), y la primera que pudo aprovechar la holgura fiscal que produjo el monopolio chileno del salitre, se esbozaron otra vez planes educacionales de índole general, que abarcaran todos los órdenes de actividad abiertos a las iniciativas juveniles, y de nuevo se habló, en la Memoria Ministerial de 1889, de establecer planteles de enseñanza comercial. Antes de esto se había ya creado un instituto agrícola, y se había desarrollado, primero al amparo de la universidad y luego con casa aparte, la enseñanza minera.

Sin embargo, hasta la administración del Presidente don Federico Errázuriz Echaurren no se abrió el primer instituto nacional de comercio.

En el Anuario del Instituto Comercial de Santiago, correspondiente a 1902, se halla la historia completa y documentada de la creación de ese colegio. De ella resulta, que se tuvieron en vista, al principio, el Instituto Superior de Comercio de Amberes y la Escuela de Altos Estudios Comerciales de París, a fin de establecer, según esos modelos, una escuela superior de enseñanza comercial. Se contrató, para darle solidez y forma a la nueva creación, a un belga que no llegó a asumir su cargo, a don José Fischweiler. Mas adelante se dejó de lado la idea de fundar una Universidad Comercial y se estudió el plan de los institutos técnicos italianos, a fin de crear más bien escuelas prácticas que, por igual, despertaran en la juventud interés por las industrias y por el comercio. Esta disparidad de propósitos acarrió una serie de planes y de medidas que no se concilian entre sí, hasta que, al fin, estos planteles han ido tomando una fisonomía propia que los acerca más que nada a escuelas secundarias de comercio, como la que la cámara de comercio sostiene en la Avenida Trudaine de París, o a las escuelas del mismo grado, alemanas, austriacas e italianas.

ESTADO ACTUAL DE LA ENSEÑANZA COMERCIAL.

Actualmente existen Institutos Comerciales en Santiago, Valparaíso, Iquique, Antofagasta, Concepción, Arica, Vallenar, Coquimbo, Talca, San Carlos y Talcahuano. El Instituto Comercial de Santiago se llama Instituto Superior de Comercio y cuenta con un curso destinado a formar profesores de enseñanza comercial, fuera de otros destinados a formar comerciantes o empleados de comercio.

Está a cargo de la dirección general de esta enseñanza en el país, un consejo que preside el Ministro del Ramo (el de Instrucción Pública) y cuyo secretario es el visitador de institutos comerciales. Esta corporación ejerce, a la vez, el papel de Junta de Vigilancia del Instituto Superior de Comercio de Santiago. El consejo presenta al Supremo Gobierno, por orden de mérito y en terna, a los futuros profesores y directores de los establecimientos que de él dependen, y le corresponden, asimismo, facultades que lo constituyen en jefe del servicio.

En cada instituto, fuera de Santiago, existe una Junta de Vigilancia que preside la autoridad administrativa del departamento, o sea el gobernador en los Departamentos que no son cabecera de provincia, y el Intendente, en los que lo son. El secretario de esa junta, según reciente decreto, será el de la intendencia o el de la gobernación.

Los planes de estudios no son uniformes por ahora; pero, en general, en todos ellos el inglés ocupa lugar preferente entre los idiomas extranjeros, y se estudian además: el idioma nacional (español); teneduría de libros; dactilografía, caligrafía y taquigrafía; geografía e historia que luego se completan con la geografía e historia comerciales; aritmética y cálculos mercantiles; ciencias naturales, química y física coronadas por el estudio de los productos comerciales; práctica de oficina; redacción mercantil; economía política y nociones de derecho con especial conocimiento del derecho mercantil y de la tramitación aduanera.

En el Instituto Comercial de Valparaíso que tomamos como modelo en esta breve exposición, los estudios duran cuatro años y se distribuyen en esta forma: El primer año de estudios está consagrado a extender los conocimientos generales y a iniciar a los alumnos en el aprendizaje del inglés. El segundo, continúa esa tarea e introduce a los alumnos en el estudio de nociones de comercio y de la aritmética comercial. El tercero, es el que se dedica a la teoría comercial, y, por fin, en el cuarto, los estudios tienen una tendencia más práctica, la que se completa con el trabajo en la oficina modelo, donde se aprende toda la rutina de oficina, el empleo de las claves y demás materias en uso en la vida comercial.

Los alumnos se gradúan, después del cuarto año, de alumnos diplomados del instituto y encuentran fácil y ventajosa colocación como empleados en el comercio, ya como ayudantes de contador, estenógrafos, etc.

En Valparaíso los ex-alumnos del instituto tienen constituida una asociación, con personería jurídica, la cual posee un club en el local del mismo establecimiento, donde disponen de salas de juego de billar, de ping-pong, sala de otros deportes, biblioteca, etc. La asociación es una mutual y ayuda a sus asociados a encontrar empleo adecuado.

El Instituto Comercial de Arica cuenta con internado y los de Santiago y Valparaíso con medio-pupilage. En este último, los alumnos medio-pupilos vienen desde todas las estaciones intermedias entre Calera y Valparaíso y son recogidos y devueltos diariamente en un vagón especial de los ferrocarriles del Estado, acompañados por dos profesores del establecimiento.

LOS PROPÓSITOS PERSEGUIDOS.

En Chile, como en la mayor parte de Sud-América, la importación y la exportación se hallan en manos del alto comercio extranjero. Por lo común sólo el comercio de segunda mano y al detalle, en el interior del país, se hace por nacionales. En vista de esto, no se proponen los institutos comerciales preparar, desde luego, a comerciantes independientes. Procuran formar dependientes de comercio, capaces de secundar al comercio extranjero y que sean aptos más tarde para actuar por su propia cuenta en empresas chilenas.

Algunos de estos planteles tienen en vista también las colocaciones que pueden ofrecerles algunas oficinas públicas en que tengan aplicación los estudios que en ellos se hacen, como son: las aduanas, consulados, la administración de ferrocarriles, oficinas de hacienda o el profesorado comercial.

Hasta, ahora, no existe la carrera oficial de peritos comerciales; pero hay una corriente de opinión en su favor y es de esperar que llegue a formarse.

PUNTO DE VISTA LATINOAMERICANO DE LA ENSEÑANZA COMERCIAL.

Lo que se ha dicho de los propósitos que persiguen los institutos comerciales chilenos, en cierto modo responde a la pregunta propuesta por la comisión del Congreso Científico acerca de cuál es el punto de vista latinoamericano sobre la enseñanza comercial.

No creemos nosotros que, en el momento actual, pueda ser esta enseñanza una mera aplicación de ciertas aptitudes profesionales, como fueron en otro tiempo todos los "business colleges" americanos. Nos inclinamos más bien a la enseñanza completa que se proporciona en las "handelschule" alemanas. La variedad de funciones que se desempeñan en el comercio, hacen quimérica la enseñanza de meras aptitudes especiales para cada ramo. Una enseñanza general, más razonada que mecánica, ofrece mayores probabilidades de éxito en el momento presente. El joven que puede orientarse en una casa mercantil por poseer conocimientos generales de todos los ramos que requiere el ejercicio del comercio, fácilmente se hace capaz de vencer las dificultades del noviciado y logra más progresos que el que ha descuidado su educación general y no sabe más que un repertorio de ejercicios prácticos y rutinarios de aplicación inmediata.

Los ejercicios de la oficina de práctica comercial le hacen fácil la iniciación a esa rutina; pero son principalmente los otros ramos de índole más razonada los que desarrollan su espíritu y le permiten encaminar fructuosamente su actividad dentro de las necesidades de la oficina en que se ocupa. En esa clase de práctica tampoco se olvidan las nociones generales, ni se descuida el por qué de las operaciones.

Los jóvenes latinos son de imaginación viva y no se conforman fácilmente con realizar operaciones cuyo sentido no entienden de un modo completo. En cambio, se consagran con empeño y con fruto a aquellas tareas que no sólo ocupan su voluntad sino que dan satisfacción a sus facultades intelectuales.

Los institutos comerciales saben también que una larga vida escolar embota las iniciativas, amilana las energías e induce a los educandos a retraerse de labores que puedan no ser muy aristocráticas. Sobre todo cosechan ese resultado los planteles en que la enseñanza es demasiado literaria y en que se descuida que el éxito las más de las veces no descansa tanto en el mucho saber como en saber lo que basta para una acción fructífera. Por eso, se han opuesto a recibir a los alumnos de los liceos (colegios de segunda enseñanza) y prefieren recibir a sus alumnos de 10 a 11 años de edad, con los conocimientos requeridos para ingresar al primer año de estudios humanistas, a fin de darles por sí mismos los conocimientos generales que hayan menester para que la enseñanza profesional tenga en que fundarse.

No han faltado quienes crean que con enseñar esos otros ramos que se cursan también en los liceos, los institutos comerciales degeneran en liceos disimulados y sin control universitario. Una observación semejante no es más que el producto de un examen superficial de estos planteles. El comerciante o el empleado de una casa comercial son individuos que deben tener la cultura correspondiente a la clase en que viven y a la sociedad de que forman parte, y, así como no es ocioso que el futuro médico o abogado cuide de su educación física, intelectual, artística, cívica, moral, no puede ser extraño tampoco que se comuniquen análogos conocimientos a los futuros ciudadanos de la República que han de actuar en el comercio.

Recibiendo a sus alumnos a los 10 o a los 11 años de edad para encaminarlos desde el primer momento hacia la actividad mercantil, no se les puede reprochar el que atiendan a la cultura completa y armónica de esos niños. La gimnasia y el canto, el dibujo y el idioma nacional, la geografía y la historia, no son en ellos menos necesarios que la teneduría de libros, la dactilografía, la estenografía y los cálculos mercantiles.

El educando que a los 15 o 16 años de edad sale de estos planteles, es un *junior* que en el comercio encuentra y encontrará siempre una acogida favorable; precisamente, porque es un hombre cuya preparación no es meramente mecánica y de una índole práctica demasiado utilitaria y, por ende, estrecha y ciega.

Aparte de los jóvenes que en temprana edad ingresan a un instituto de enseñanza comercial, llegan a las filas del comercio muchos otros que no han logrado una instrucción semejante y a los cuales no se puede negar el aprendizaje que necesitan. Para éstos, es útil un instituto de la índole de los "business colleges" americanos y los hay en Sud-América, como no faltan en Chile. En algunos planteles, como en el Instituto Comercial de Valparaíso, los cursos destinados a esos jóvenes funcionan de noche. Sirven a este objeto también muchos de los planteles particulares pagados.

Cuando se trata de la enseñanza comercial como una rama de la enseñanza nacional, los fines particulares y muy restringidos de esta clase de planteles no ocupan, todavía, más que un lugar secundario. Sin duda, a medida que la enseñanza comercial se perfeccione, esos planteles servirán para preparar las especialidades y para completar, entre los empleados y comerciantes noveles, la enseñanza sistemática que se proporciona en los establecimientos en que los jóvenes llevan vida escolar y en que permanecen durante algunos años antes de admitir una ocupación de una casa comercial.

JOINT SESSION OF SUBSECTIONS 1, 2, 3, 8, AND 9 OF SECTION IV.

GEORGE WASHINGTON UNIVERSITY,
Thursday afternoon, December 30, 1915.

Chairman, EDMUND J. JAMES.

The session was called to order at 2.30 o'clock by the chairman, who announced the reading of the following papers:

Instrucción agrícola, by José Comallonga y Mena.

La instrucción intermediaria, by J. Alberto Gámez.

Readjustment in elementary and secondary schools in response to changing industrial and social needs, by L. D. Harvey.

INSTRUCCIÓN AGRÍCOLA.

Por JOSÉ COMALLONGA Y MENA,

Catedrático de Economía Rural de la Universidad Nacional de la República de Cuba.

CUBA Y SU PRODUCCIÓN AGRÍCOLA.

Un breve prontuario estadístico, con ligeros datos de climatología, territorio y estudio somero de nuestra situación económica, a mi juicio precede, para mejor conocimiento de mi país, así como para que se aprecie la razón de estudiar una materia que tanta influencia ejerce, en sus distintos aspectos; permitiendo a un tiempo exponer aunque sea someramente, lo que son o lo que constituyen nuestras fuentes de producción en Cuba, y lo que representa nuestra capacidad económica internacional, con respecto a los demás países.

Cuba posee una extensión territorial de 120,000 ks., o sean 840,000 caballerías de tierra cubana, que equivalen a 13.42 hectáreas ó 33.16 acres cada una.

Las lluvias anuales que caen se pueden estimar entre 1,400 a 1,500 milímetros; sus temperaturas mínimas entre 10 y 13° C., y sus máximas de 35 a 37° C.; la población es de 2,500,000 habitantes. Nuestro comercio es notable con relación al número de habitantes que tenemos: el de importación alcanzó en 1913 y 1914 a 71,420,000 pesos con los Estados Unidos; 9,362,000 con otros países americanos; 8,276,000 con Alemania; 10,588,000 con España; 8,257,000 con Francia; 14,581,000 con Inglaterra; 8,064,000 con otros países europeos y 3,460,000 con el resto de los demás países. La exportación alcanzó a 136,936,000 pesos con los Estados Unidos; 4,395,000 con otros países americanos; 4,436,000 con Alemania; 1,100,000 con España; 2,656,000 con Francia; 18,242,000 con Inglaterra; 1,219,000 con otros países de Europa y 1,817,000 con los demás. Nuestro comercio de importación por tanto fué de 134,008,000 pesos y el de exportación de 170,797,000 pesos, de los cuales el 53.2 por ciento de las importaciones corresponden a los Estados Unidos y el 80.1 por ciento de las exportaciones a ese mismo país.

Nuestras exportaciones principales son: Azúcar, tabaco, cacao, miel de abeja y minería.

Por nuestra producción de azúcar y sus derivados exportamos el año 1913 por valor de 118,028,000 pesos y por la de tabaco en rama y manufacturado exportamos 31,482,800 pesos.

Nuestras tierras en cultivo las podemos dividir en la siguiente forma:

Cultivadas de caña (año 1913) 40,412 caballerías ó 542,330 hectáreas.

Bajo la esfera de acción de los centrales azucareros, incluyendo parte de bosques, existen 47,610 caballerías ó 638,926 hectáreas. En el año actual se pueden estimar de tres a cuatro mil caballerías más, cultivadas en caña.

Destinadas o propias para el cultivo del tabaco 16,977 ó 227,831 hectáreas.

Destinadas al cultivo de piñas 1,000 ó 13,420 hectáreas notándose una tendencia muy visible a una gran ampliación de este cultivo cuyo mercado estábamos en vías de extender a Europa cuando estalló la gran guerra.

Destinadas al cultivo del café 3,000 ó 40,280 hectáreas con tendencia a aumentar.

Destinadas al cultivo de la naranja 500 ó 6,710 hectáreas.

Destinadas a cultivos menores 38,502 ó 516,896 hectáreas.

Destinadas a crianza de ganado 197,485 ó 2,650,284 hectáreas.

Estas tierras de pastos alimentan algo más de 2,600,000 cabezas de ganado vacuno y 580,000 cabezas de ganado caballar y asnal.

El resto de nuestras tierras están representadas por 122,778 caballerías de montes altos y bajos o sean 1,647,680 hectáreas; unas 13,000 caballerías de ciénagas y manglares ó 174,460 hectáreas y el resto en tierras de labranza sin cultivos.

Poseen nuestros centrales azucareros con sus colonias de caña 1,393 kilómetros de vías férreas anchas y 3,117 kilómetros de vías estrechas, o un total de 4,510 kilómetros todos de propiedad y uso privado; pero además posee Cuba 3,806 kilómetros de vías férreas públicas y 1,789 kilómetros de carreteras.

Poseíamos el año de 1913 un total de 177 centrales azucareros; pues ya este año ascenderán a 183 ó 185. Los 177 ingenios consumen para su trabajo 476,115 caballos de fuerza, sin incluir la que le consumen 500 locomotoras de que disponen para el transporte del azúcar y principalmente de la caña.

Nosotros poseemos los más grandes ingenios azucareros del mundo figurando a su cabeza el "Central Chaparra" fundado por nuestro honorable Presidente de la República, Mario G. Menocal, cuyo central sobrepasa la cifra de 500,000 sacos de 13 arrobas cada saco por zafra.

Creo que estos antecedentes numéricos bastarán para que como dije al principio, se llegue a conclusión bastante exacta sobre lo que es nuestra capacidad económica actual; lo que como país esencialmente agrícola representamos entre nuestras repúblicas americanas, el esfuerzo que venimos realizando en el concierto del trabajo y de la producción, y de los empeños que aun podemos realizar para elevarnos al rango a que aspiramos alcanzar; pero un ligero estudio de nuestras peculiares condiciones completarán mejor este esbozo.

Nuestros dos grandes cultivos, que son los que nos dan el poderío de nuestra gran riqueza y producción, se establecen bajo bases bien distintas por cierto, porque mientras para la caña seguimos el cultivo extensivo, propio hasta ahora de nuestra condición territorial en el desarrollo de los latifundios, dentro del cultivo del tabaco por las peculiaridades del suelo que reclama esta planta y sus exigencias de explotación nos vemos forzados a desenvolver el cultivo intensivo dentro de todos los principios y métodos que la moderna agronomía determinan y por lo tanto procedemos con esta planta como país escaso de tierras, porque en efecto escasas son las buenas tierras de tabaco. Esto establece en el país la diferencia cualitativa que naturalmente existe entre el rutinismo de un sistema y la técnica agrícola del otro, dando lugar a dos tipos de cultivadores distintos; o a dos tendencias dentro de una misma población agrícola.

Como se observa en lo que he dejado expuesto, y no obstante ser actualmente de tonos optimistas la condición cubana como país productor y exportador, la previsión para el futuro ha creado entre nosotros una nueva corriente agraria con el fin de darle mayor diversificación a las energías agrícolas que poseemos. El resultado actual de nuestro estado económico puede estimarse como extraordinario, si establecemos relación entre lo que producimos y nuestra población; pero a poco que nos detengamos en el análisis de ello veremos que en nosotros, como en cualquier otro país, "la masa de explotación capitalista, crece años tras años como en toda nación capitalista, mucho más de prisa que su población."

Este fenómeno corriente en países de nuestra condición resulta más visible o evidente entre nosotros, porque uno de los productos agrícolas que nos impulsan a este desarrollo inusitado es la caña de azúcar.

El progreso de la mecánica, las aplicaciones de la electricidad, la química agrícola han sido los factores que en otros países han realizado este milagro; pero si esto ha ocurrido en términos generales en todas partes y en casi todos los cultivos, es evidente que la progresión se acentúa muchísimo cuando del producto de que se trata es la caña, que por destinos de las cosas disfruta de lugar prominente en este gran empeño de la evolución agrícola.

En efecto en ninguna explotación agrícola como en la caña y en la remolachá se observa tan firme trabazón entre su cultivo y los negocios; en ninguna se vinculan con tanta intimidad la ciencia y el capital; la agricultura y la industria; y en ninguna explotación por esas armonías, se percibe con mejor visión, el provecho industrial creciente que en el seno de sus propias entrañas guarda esa industria prodigiosa.

Esto a su vez trae de modo consecuente que la baja de la renta de la tierra por la baja natural del producto que ella ofrece, o por la energía íntima que el cultivo que se explota tiene para extenderse, se defiende mejor con este cultivo de la caña que en los demás, porque el consorcio agrícola-industrial se estrecha de tal manera que ya a estas horas no podemos decir, si en efecto la fabricación del azúcar es una industria rural o no; no obstante tener todas sus condiciones.

El vigoroso desarrollo de la industria azucarera en nuestra región oriental ha elevado como ninguna otra iniciativa habida después de la fecha de nuestra independencia, los valores y la renta de aquellas tierras.

Y si analizamos con mayores detalles este fenómeno de industrialización agrícola entre nosotros, observamos que nuestra caña no ha seguido un perfecto paralelismo con los otros países—aun con los otros países cañeros—en esta evolución; porque todos los agentes propulsores que a esta obra concurren en todas partes, no han concurrido en nosotros para engendrar esta forma capitalista de la explotación. Esto se ha debido hasta ahora a peculiares condiciones de nuestro país, tales como la abundancia de tierras fértiles y de las mejores tierras para el cultivo de la caña; a nuestra climatología propicia, que con raras excepciones nos provee de agua en los períodos más útiles para esa planta; y pesando tanto como estas condiciones, la de tener a nuestro lado con la ventaja de los transportes económicos, el natural e inmenso mercado azucarero de los Estados Unidos que consume la cantidad de nuestras cosechas, por grandes que éstas sean. Ni el maquinismo, porque nuestro cultivo como ya he dicho antes es sencillo; ni la electricidad, ni la ciencia agronómica han, hasta estos momentos, influido remotamente en el desarrollo tan grande de nuestra agricultura cañera, de nuestra industrialización agrícola.

Véase a este respecto lo que dice un notable agrónomo norteamericano, Mr. Noel Deer, quien durante algún tiempo fué funcionario en nuestra Secretaría de Agricultura.

La Isla de Cuba tiene fama, con o sin razón, de ser el país peor cultivado de todos aquellos en que se produce la caña; pero su posición prominente como el mayor y al mismo tiempo como el productor más barato de azúcar en el mundo, parece contradecir esa impresión, al menos económicamente, y es probable que la ausencia del cultivo sea el resultado de la selección natural de los procedimientos más adaptables a las condiciones locales. El objetivo principal del productor es obtener el maximum

de utilidad, y si ese máximo lo obtiene con un pequeño rendimiento de materia prima por acre, no se le puede culpar, si sus rendimientos no son tan grandes como los que se obtienen en otros distritos, donde las condiciones son muy diferentes a las de Cuba; esa producción económica es aún más notable, cuando además del rendimiento neto por acre, se toma en consideración el elevado precio a que se pagan los jornales.

La diferencia enorme que existe entre las condiciones de Cuba y las de otros países donde se cultiva la caña de azúcar, puede estudiarse mejor, haciendo una comparación entre las condiciones de Cuba y las de Java y Hawaii; por esta comparación se verá que los métodos en un distrito, resultan impracticables cuando se trata de implantarlos en otro; las diferencias más importantes entre esos distritos son:

Cuba.—La producción está dividida entre los ingenios más antiguos cuyas tierras se están cultivando desde hace muchos años y grandes áreas de terreno virgen muy productivo.

Hawaii: Casi toda la tierra utilizable está cultivada.

Java: Las tierras dedicadas al cultivo de la caña de azúcar están controladas por el Gobierno, quien fija la cantidad de caña que se ha de sembrar en cada distrito anualmente.

Cuba y Hawaii: La tierra está bajo el dominio de los propietarios. En Cuba estos arriendan sus tierras.

Java: Los propietarios indígenas arriendan las tierras por año.

Cuba y Hawaii: El número de trabajadores es limitado ganando altos jornales; los braceros de Cuba, son más escasos, pero el jornal es mayor que en Hawaii.

Java: Numerosa población indígena y jornales baratos.

Cuba: Los productos se venden con pequeña protección.

Hawaii: Los productos hasta el presente se venden con protección.

Java: Los productos se venden sin protección alguna.

Cuba: Mercado inmediato, con pocos gastos de flete.

Hawaii: Gran distancia del mercado principal con grandes gastos de flete.

Java: Mercado inmediato, (India Inglesa) y a gran distancia.

Cuba: Las cosechas se producen completamente solo con las lluvias naturales.

Hawaii: Gran parte de la cosecha se produce en distritos áridos independientemente de las lluvias.

Java: Se emplea la irrigación, pero generalmente las cosechas dependen de las lluvias.

La combinación de estas condiciones creo yo que sea la causa del sistema extensivo del cultivo empleado en Cuba, opuesto al sistema intensivo que se practica en Java y Hawaii; estos dos distritos producen más azúcar por acre que Cuba.¹

Para puntualizar más, consideremos el rendimiento máximo de caña por acre como A, B, C, toneladas por acre. Ahora, yo creo que es evidente que la primera unidad de producción A toneladas por acre, costará menos de producir que la segunda unidad de producción B toneladas por acre, que a su vez costará menos de producir que la tercera unidad de producción C toneladas por acre, etc.

Como ejemplo, supongamos que 20 toneladas de caña por acre se pueden producir a un costo de \$1.50 por tonelada; que aumentando el cultivo, los trabajos, etc., se pueden producir 10 toneladas más de caña por acre a un costo de \$2 por tonelada, haciendo en total una producción de 30 toneladas por acre, a un promedio de costo de \$1.60; ahora supongamos que esa caña se vende a \$1.80 la tonelada: cuando se producen 20 toneladas de caña por acre la caña que cuesta \$30 se venderá por \$36, dejando una utilidad de \$6; cuando se producen 30 toneladas de caña por acre, la caña que cuesta \$50 se venderá por \$54 dejando solo una utilidad de \$4.

Pero ahora, en vez de venderse la caña a \$1.80 por tonelada hagamos el precio \$2; entonces con 20 toneladas por acre y vendiéndose la caña por \$40 se obtendrá una

¹ El rendimiento industrial de azúcar por acre es de 2.15 toneladas de 2,000 libras.

utilidad de \$10 por acre; y también las 30 toneladas de caña, que cuestan \$50 producir, se venderán por \$60, dejando una utilidad de \$10. Vendiéndose una a \$2 por tonelada, la utilidad por acre cuando se producen 20 toneladas será de \$14 y cuando se producen 30 toneladas la utilidad será de \$16.

Según se desprende de este argumento una gran producción por acre ocasionará pérdidas, y yo creo que en dicho raciocinio se encontrará la causa de la baja producción de azúcar por acre en Cuba, y al mismo tiempo la causa de la elevada producción por acre que se obtiene en Hawaii; donde el jornal barato, y hasta ahora el alto precio del azúcar, han hecho posible la producción de caña mucho más cara dejando utilidad por acre. La gran producción en Java donde no existe el estimulante de altos precios, se debe sólo a la baratura del jornal.

Opino que los métodos técnicos de cultivo tan deficientes en Cuba son motivados solo por razones económicas, y que no se debe culpar al hacendado por no adoptar un sistema más intensivo, y no producir más cantidad de materia prima por acre de terreno. Estas consideraciones se refieren particularmente a las condiciones normales del mercado, y no a los precios anormales que ahora existen.

De manera que en este orden de cosas, dentro de nuestro medio agrario, hay que reconocer, que la explotación del latifundio cubano no ha obedecido hasta hoy al afán de cultivar racionalmente el fundo, empleando los métodos y máquinas modernas; sino a meras condiciones de carácter local que no obstante la opinión de Mr. Noel Deer se harán insostenibles a medida que los precios del azúcar bajen (en tiempos normales) y los rendimientos de caña bajen también.

Aquí impera la explotación por el arriendo del cultivador y no por la directa explotación del propietario, como ocurre en otros países.

El que esto escribe ni es partidario del latifundio—pues siempre que me es dable lo combato—ni del peligroso sistema casi monocultural que tenemos; porque con aumento de la población y la sobra de tierras que tenemos podríamos desplegar energías nuevas y provechosas para equilibrar nuestros desmayos en los días de crisis; pero a la vez creo, que para que este país sostenga la indiscutible supremacía que ya tiene sobre todos los demás países azucareros, deben irse buscando soluciones apropiadas para ese fin; dividiendo como ya lo hacen algunos hacendados azucareros sus tierras cansadas, porque casi todas las tierras de caña son de ellos, en pequeñas colonias que les llegan a ofrecer promedios de 70,000 arrobas por caballería, aunque esta división sea hecha a base de arriendo de la tierra como hoy se hace, para llegar quizás mañana a la apropiación del suelo por el pequeño colono, y más adelante, allá para más remotos tiempos llegar quizás a formas cooperativas y de asociaciones para la industria que permitan emplear esos estímulos que la ciencia ofrece a un cultivo que tendría que llegar tal como va, a un término, porque las tierras no son inagotables ni en calidad ni en cantidad.

Es verdad que aun nos quedan montes vírgenes y fértiles tierras que explotar; pero es evidente también que ya tenemos grandes zonas depauperadas, cuyos rendimientos de caña fluctúan entre 35 y 40 mil arrobas por caballería (33.16 acres) y como no es posible pensar en la futura desaparición de esos centros, tenemos que ir pensando en el empleo de máquinas y métodos agrónómicos, inéditos para este cultivo en Cuba, a fin de enaltecer y garantizar nuestra enorme producción de azúcar.

Nosotros no somos, ni seremos en mucho tiempo país de grandes industrias manufactureras, nosotros no levantaremos por ahora alrededor de las grandes urbes colosales industrias de esta clase, ni al pie de nuestros lindos valles o de las regiones metalíferas levantaremos ni grandes fábricas ni altos hornos capaces de llevar a su seno 20,000 ó 30,000 obreros; pero sí somos país agrícola y de industrias agrícolas; nosotros a cada 10 kilómetros de distancia miramos la torre altiva de un ingenio azucarero; pero nosotros podemos ver también y los veremos, talleres rurales a cada paso y las humildes torres, de múltiples humildes industrias agrícolas, y nosotros

podemos ver sellados por todas partes el campo con prometedores cultivos, porque si dentro de nuestro cuerpo nacional, tenemos un alma agrícola, la voluntad nos llevará a que seamos lo que debamos ser.

En este sentido afortunadamente se observa en nuestro Congreso la tendencia a dotarnos de algunas leyes de las que hoy carecemos, y a reformar otras, que nuestra inexperiencia dictó en los primeros días de nuestra República.

En efecto en los momentos actuales una ley eficaz de fomento agrario se acaba de aprobar en nuestro Senado, pudiendo predecir que será aprobada en la Cámara de Representantes. Débese este paso de avance al ilustre senador por la provincia de La Habana, Dr. Antonio Gonzalo Pérez, quien me hizo el honor de solicitar mi colaboración en dicho trabajo.

Otro proyecto de ley aprobado por el Senado y presentado por el cultísimo senador por las Villas Dr. Leopoldo Figueroa, acaba de ser aprobado en la Cámara de Representantes. Este proyecto de ley no solo reforma nuestro arcaico Plan de Estudios de la Escuela de Agronomía de la Universidad Nacional, sino que lo organiza y reconstruye dentro de un molde más útil y más en consonancia con los progresos de las ciencias que a los estudios agrícolas superiores corresponden.

Otro proyecto de ley reformando los planes de las Granjas Escuelas que poseemos se ha presentado en la Cámara de Representantes y otro proyecto de ley reformando nuestra ley de colonización está pendiente de discusión en el Senado.

A reserva de exponer más adelante los proyectos de ley que se refieren a las reformas de la instrucción agrícola, copio a continuación el meritorio trabajo del Dr. Gonzalo Pérez a que antes me referí:

PROPOSICIÓN DE LEY.

ARTÍCULO 1. En cada municipio habrá una junta local de agricultura, compuesta de siete miembros, vecinos de la localidad, propietarios agrícolas o arrendatarios o aparceros, propietarios ganaderos o propietarios de industrias agrícolas, nombrados por el Ejecutivo a propuesta del ayuntamiento respectivo. Serán vocales natos, el alcalde y el presidente del ayuntamiento y los agrónomos titulares que residan en la municipalidad.

Todos los cargos de esa Junta serán honorarios y gratuitos; y los miembros de nombramiento se renovarán en la proporción de tres y cuatro cada dos años, pudiendo ser nombrados nuevamente.

ART. 2. Dichas juntas tendrán por objeto:

(a) Promover el fomento agrícola de su municipio, cuidando del mejoramiento de los cultivos, aumento de industrias rurales, perfeccionamiento y cría de animales de raza caballar, vacuno, de cerda, de aves y demás animales domésticos, mediante el establecimiento de campos de demostración en predios privados o en aquellos que designen los municipios o consejos provinciales respectivos.

(b) Girar visitas a las Escuelas rurales, a los mercados, mataderos, fruterías, vaquerías y centros de industrias rurales, con el fin de difundir, teórica y prácticamente, con el auxilio de técnicos las mejores doctrinas en pro del desarrollo de las citadas riquezas.

(c) Proponer primas de estímulo y premios de fomento agrario en general y las medidas adecuadas para regular los desmontes.

(d) Formar con el auxilio de las oficinas provinciales las estadísticas anuales de producción y de cosechas en general y las de Inmigración y salarios agrícolas.

(e) Formar con el auxilio del agrimensor provincial y el del municipio, si lo hubiere, y con los antecedentes que soliciten y les remitan los registros de la propiedad, cuadros catastrales de la propiedad rural, investigando y determinando las zonas de montes cultivables o no, los pantanos existentes, y las clases de tierras, según la clasificación corriente.

(f) Llevar un registro de consultas escritas, que serán evacuadas por los técnicos de las oficinas provinciales, por escrito o personalmente, trasladándose, al efecto, el agrónomo o el veterinario al lugar donde la consulta se hiciere.

(g) Instruir los expedientes que correspondan a los asuntos que afecten a sus funciones.

(h) Informar, indicando los recursos necesarios que, en caso de calamidad, deban concederse por sus respectivas localidades; y promover el estudio de plagas y malas hierbas y su extinción.

ART. 3. Además de lo indicado en el artículo anterior, es misión de las juntas locales, perseguir con exquisito celo el desarrollo de la producción de los artículos de consumo de primera necesidad, con el fin de abaratar su precio en el mercado, promoviendo el aumento de los pequeños cultivos y de las industrias rurales, y su perfeccionamiento por medio de la enseñanza agrícola; y el de contribuir, por cuantos medios estén a su alcance, a que el aspecto y la higiene de la vivienda rural se modifiquen favorablemente.

A ese fin, podrán proponer a sus respectivos ayuntamientos la exención de contribuciones a la pequeña propiedad o sitios de labor, por el tiempo y con las condiciones que estimen adecuados.

Podrán solicitar también de las empresas nacionales o extranjeras, y de las personas de reputación y arraigo, la creación de explotaciones agrícolas que determinen aumento de producción de los artículos de consumo de primera necesidad y su abaratamiento en los mercados, y la fundación de centros de enseñanza agrícola o de zootecnia, de acuerdo con lo que más adelante se expresará.

ART. 4. Las Juntas Locales se reunirán, por lo menos, una vez al mes y darán cuenta a la Junta Central de Agricultura de los acuerdos que tomen, pudiendo reclamar los servicios de las oficinas provinciales que se crean por esta ley, para la celebración de conferencias sobre cultivos, asociaciones agrícolas y de crédito rural, investigaciones y demostraciones agrícolas o de zootecnia, y para evacuar las consultas que por escrito les hagan los agricultores de la localidad.

ART. 5. Los Ayuntamientos proveerán a dichas juntas de local, material de oficina y de un secretario.

La Secretaría de Agricultura, Comercio y Trabajo, proveerá a las juntas locales de los siguientes aparatos registradores automáticos, donde lo crea necesario: un termómetro, un barómetro, un anemómetro y un pluviómetro, y una veleta, con el fin de establecer la más exacta climatología nacional y de cosechas.

Para esta atención se consignará anualmente en los presupuestos de gastos de ese departamento, un crédito de \$3,000.

ART. 6. En cada Provincia habrá, una oficina agronómica provincial adscrita a la secretaría de Agricultura, Comercio y Trabajo, con el siguiente personal:

	Anuales.
1 ingeniero agrónomo.....	\$2, 400
1 veterinario.....	1, 800
1 agrimensor.....	1, 200
1 mecanógrafo.....	900
1 mozo de aseo.....	300
Para viajes y dietas a razón de \$2 diarios.....	2, 000
Total.....	8, 600

Estas oficinas realizarán los trabajos y prestarán los auxilios que les ordene la Secretaría de Agricultura, Comercio y Trabajo, y los que reclamen las juntas locales.

Los consejos provinciales proveerán a estas oficinas de local y del material necesario.

ART. 7. Se crea una Junta Central de Agricultura, con residencia en la Habana, compuesta de doce miembros, que habrán de ser propietarios rurales o de industrias agrícolas o ganaderas, nombrados por el Ejecutivo por dos años, pudiendo ser nom-

brados nuevamente. Serán además vocales natos, los profesores de las escuelas de agronomía y veterinaria y los directores de la Estación Agronómica y de la Granja Escuela de la Habana. El Secretario de Agricultura, Comercio y Trabajo y el Director de Agricultura serán presidente y secretario, respectivamente.

Esta junta tendrá por objeto estudiar, informar y proponer al Ejecutivo las resoluciones que estime adecuadas respecto de las recomendaciones que hagan las juntas locales, sobre primas o premios anuales y demás indicaciones que formulen para el mejoramiento de los cultivos y otros particulares que tengan relación con la agricultura.

Propondrá la celebración de ferias-exposiciones o concursos agrícolas y las demás resoluciones que estime adecuadas para la enseñanza agrícola, las explotaciones agrarias, y en general para cuanto tienda al mayor auge y desarrollo de la riqueza nacional en sus diversos aspectos de producción, patrocinando aquellas iniciativas que estime beneficiosas, proponiendo al efecto lo que crea conveniente.

ART. 8. La junta central estará facultada, además, para resolver, con la aprobación del Ejecutivo, los siguientes particulares:

(a) Conceder hasta el 15 por ciento en concepto de subvención sobre el valor de las tierras, aparatos y obras ejecutadas destinadas exclusivamente a escuelas agrícolas, industriales o de artes y oficios o a estaciones agronómicas o de industria animal, siempre que su funcionamiento haya sido debidamente aprobado.

(b) Conceder en concepto de subvención, durante un período de 10 a 15 años, hasta el 20 por ciento del costo del personal docente de esos establecimientos, pudiendo ser nombrados los profesores libremente por los directores del establecimiento escolar, a condición de que justifiquen con los títulos correspondientes, que proceden de acreditadas escuelas nacionales o extranjeras.

No se podrán conceder dos subvenciones a escuelas superiores de igual índole en una misma provincia, ni dos subvenciones a escuelas medias en un mismo municipio, si éstas ofrecen iguales enseñanzas; ni se concederán tampoco dos subvenciones a dos Estaciones de idénticos fines en una provincia, entendiéndose que tienen idénticos fines cuando se trate de la enseñanza o de la investigación de una misma rama de la agricultura o de la industria animal.

Los ayuntamientos y los consejos provinciales podrán acogerse a estos beneficios para la creación de escuelas de agricultura, en la forma y bajo las condiciones que acuerde la junta central.

Para esta clase de subvenciones se consignará anualmente en el presupuesto de gastos de la Secretaría de Agricultura, Comercio y Trabajo, bajo el epígrafe de "Subvención a Estaciones y Escuelas de Agricultura" la suma de \$100,000.

(c) Conceder al propietario que reparta tierras entre familias a razón de una hasta dos caballerías por familia, destinadas a cultivos menores o industrias rurales, la exención de contribuciones de las tierras repartidas, previo informe de la junta local. Podrá conceder además, como anticipo a reintegrar en la forma que se expresará, a dichas familias agrícolas, una yunta de bueyes, un arado, dos guatacas, diez gallinas y un gallo, seis rollos de alambre y las semillas correspondientes al cultivo a que se vayan a dedicar.

El contrato entre el propietario y la familia agrícola, tendrá por base la futura propiedad de la tierra en los plazos que se estipule, pagaderos por anualidades con un interés razonable.

La familia agrícola reintegrará al Estado el 50 por ciento del costo de los animales, aparatos y semillas que le fueren entregadas, por anualidades, empezando el reintegro después de los dos primeros años. Mientras no quede pagado el 50 por ciento referido, no podrá disponer libremente de los animales e instrumentos recibidos. Si se trata de familias extranjeras, la Secretaría de Agricultura, Comercio y Trabajo, les reintegrará, con cargo a inmigración, los gastos de pasaje que hubiere satisfecho.

(e) Cuando se trate de cultivos de artículos de consumo de primera necesidad, podrán concederse primas anuales de \$15 por hectárea, si el cultivo no fuese mayor

de seis; \$10 si llegase a una caballería (13.42 hectáreas); y de \$5 si el área del cultivo fuese mayor, sin que pueda exceder nunca de 30 hectáreas. Se concederán iguales primas a los cultivos llamados económicos o industriales, si diesen nacimiento a un nuevo cultivo o industria rural.

ART. 9. La junta Central al proponer las subvenciones especificará las condiciones que al efecto deban reunir los cultivos o industrias rurales, debiendo los que deseen acogerse a sus beneficios notificarlo a la Junta local respectiva, con la debida anticipación, a fin de que ésta pueda emitir su informe a la junta central.

Para esta clase de subvención se concede un crédito anual de \$200,000, que podrá ampliarse o disminuirse en cada presupuesto.

ART. 10. Para las industrias agrícolas, apícolas, almidoneras, oleaginosas, cremeras, de desfibrado o desmotado, vinícolas o de cerda, o de cualquier otra clase de industria rural, establecida y explotada de acuerdo con los principios modernos y con aparatos y procedimientos adecuados, se concederán cinco premios anuales por cada municipio, de \$100 cada premio.

Si las industrias de una misma clase fuesen más de tres en un Municipio, se turnarán por años para que alternativamente resulten todas beneficiadas.

Para estos premios se consignará en los presupuestos anuales un crédito de \$50,000 que podrá restringirse o ampliarse en cada presupuesto.

ART. 11. Cuando dos o más personas se asocien para emprender cultivos o industrias agrícolas en gran escala de algodón, yute, henequén, sanseveria, ramié, caucho, aceites, arroz, café, quesos, manteca o cualquier otra industria o cultivo, que representen una nueva iniciativa a ese respecto, podrán hacerse concesiones especiales, previo informe de la junta central, en forma de primas anuales, por producción previamente estipulada, por concesión de tierra del Estado, o en otra forma, sin que en ningún caso pueda constituir un monopolio que impida el desarrollo de otra iniciativa igual.

Para esta atención se consignará anualmente en los presupuestos un crédito de \$50,000 que podrá aumentarse o disminuirse en cada presupuesto.

ART. 12. Previo informe favorable de la junta local correspondiente y la aprobación de la junta central, se podrán conceder pensiones mensuales de \$10 por persona, a las empresas agrícolas o de industrias rurales, que admitan de uno a cuatro alumnos, hijos de campesinos pobres, en calidad de estudiantes, aprendices de la industria o producción que exploten.

Asimismo se podrán conceder premios de \$100 cada uno sin que puedan exceder de 40 por Provincia, a los propietarios que personalmente cultiven tierras, en cantidad no mayor de dos caballerías, siempre que construyan para vivienda casas de tabla o mampostería, con techos de tejas, pisos apropiados, divisiones interiores convenientes, jardines y demás detalles de la vida higiénica y confortable.

Todos los años se sortearán seis premios, uno por provincia, de \$500 cada uno, entre los cultivadores, industriales y los dueños de fincas que habiendo construido sus viviendas en la forma indicada, hayan obtenido premios o primas. El sorteo se verificará durante la celebración de la feria-exposición anual.

ART. 13. Las Juntas Locales podrán proponer medios adecuados para la adquisición y reparto de tierras entre campesinos pobres, así como los demás estímulos que juzguen adecuados para el aumento de la población rural y el desarrollo y perfección de la agricultura en todos sus órdenes.

Para estas atenciones, y para imprevistos y calamidades públicas, que afecten grandemente a la agricultura, se consignará en los presupuestos generales un crédito de \$100,000 que podrá aumentarse o disminuirse en cada presupuesto.

ART. 14. Todos los años, durante la estación invernal, se celebrará una feria-exposición o concurso agrícola en Provincias distintas, a fin de que todas resulten directamente favorecidas, a cuyo efecto, no podrán celebrarse, consecutivamente, dos ferias-exposiciones en una misma Provincia.

Para cuanto se relacione con la organización de las ferias-exposiciones se nombrará una junta, de la cual serán vocales natos el gobernador provincial, el presidente del consejo, el director de la granja escuela, el alcalde municipal, el presidente del ayuntamiento y el de la junta local de agricultura de la capital de la provincia en que se celebre la exposición. Serán también vocales natos, los alcaldes municipales, los presidentes de los ayuntamientos y los presidentes de las juntas locales de aquellos municipios que concedan premios o estímulos de alguna clase a los expositores de sus respectivas localidades.

Al construirse los edificios para las ferias-exposiciones, se procurará que algunos de ellos tengan carácter de permanente, con el fin de que puedan ser utilizados después para la enseñanza agrícola.

Para esa atención se consignará anualmente en los Presupuestos Generales la cantidad de \$100,000.

ART. 15. En el presupuesto de la Secretaría de Agricultura, Comercio y Trabajo, se consignará anualmente bajo el epígrafe de "Estudios y Becas en el Extranjero," un crédito de \$10,000 para pagar los estudios, durante un año, a los alumnos más eminentes de las granjas escuelas, uno por cada una de ellas, que, previa oposición designe un tribunal formado por los seis Directores de las granjas, presidido por un profesor de la escuela de agronomía.

Los alumnos así designados rendirán un amplio informe comprensivo de los estudios y de las experiencias que hubieren realizado.

ART. 16. Se crea una Delegación especial permanente (técnica) en el Instituto Internacional de Agricultura de Roma, consignándose, al efecto, en los presupuestos de la Secretaría de Agricultura, Comercio y Trabajo, un crédito de \$5,000 que se distribuirá: \$4,000 para un Delegado especial (técnico); \$500 como contribución para los gastos de dicho Instituto y los \$500 restantes, para material y demás gastos de la delegación. El delegado remitirá mensualmente a la Secretaría un informe de los trabajos de dicho instituto y de cuantos otros particulares crea útiles o convenientes para la enseñanza agrícola y sus estudios económicos. El Ejecutivo someterá al Senado la aprobación de este nombramiento.

• ART. 17. Los dueños o arrendatarios de predios rústicos, podrán solicitar y obtener de la Secretaría de Agricultura, Comercio y Trabajo, por conducto de las juntas locales de agricultura, posturas, semillas o estacas de árboles en condiciones de trasplante, obligándose el solicitante a cuidarlos. Las posturas o estacas, serán adquiridas por la Secretaría de Agricultura, Comercio y Trabajo, por conducto de los inspectores de Montes, hasta tanto en las Provincias de Pinar del Río, Habana, Matanzas y Santa Clara, queden establecidos viveros o almácigas, que puedan proveer de árboles a los agricultores que los soliciten.

Los terratenientes que en la Provincia de Pinar del Río, Habana, Matanzas y Santa Clara, repoblasen con árboles frutales, maderables o de construcción, una extensión apreciable de sus propiedades, podrán solicitar y obtener una prima o indemnización que no pasará nunca del 50 por ciento del costo ocasionado por la repoblación forestal.

Para esa atención se consignará anualmente en los presupuestos generales la suma de \$5,000, modificable en cada presupuesto.

ART. 18. Para el establecimiento de viveros o almácigas, el Estado podrá adquirir tierras apropiadas, en lotes de una a dos caballerías, que se entregarán a las granjas escuelas a los fines indicados.

Para esta atención y para que el Estado pueda contratar los servicios de profesores titulares (agrónomos eminentes) por un período de cuatro años, se consignará anualmente en los presupuestos generales la cantidad de \$40,000.

ART. 19. Para el establecimiento y fomento de seis centros de recreo, uno en cada Provincia, adscritos a las granjas escuelas, se consignará en los presupuestos el crédito necesario.

Para la enseñanza agrícola ambulante y para cualquiera otra atención relacionada con la misma y no prevista en esta ley, se concede un crédito de \$6,000.

ART. 20. No estarán sujetas al impuesto territorial las fincas rústicas cultivadas por sus dueños, dedicadas principalmente a la producción de artículos de consumo de primera necesidad, que no excedan de dos caballerías de tierra, y cuyos dueños no posean otros bienes.

La compraventa de fincas rústicas, cuya cabida no exceda de dos caballerías de tierra, siempre que los compradores lo hagan para residir en ellas y cultivarlas, no estará sujeta al pago de derechos fiscales ni de inscripción en los registros de la propiedad.

A propuesta de la Junta Local respectiva, con informe favorable de la junta central, podrá declararse por el Ejecutivo, que no es embargable ni ejecutable, en ningún caso, una porción determinada de las fincas rústicas que no excedan de dos caballerías, siempre que en ellas residan permanentemente sus dueños con sus familias.

ART. 21. Los créditos que por esta ley se conceden, no podrán ser invertidos en otras atenciones que las que se indican en cada caso; quedando prohibido en lo absoluto, la transferencia de los mismos.

ART. 22. Quedan suprimidas las actuales juntas provinciales de agricultura, y derogadas cuantas leyes, órdenes y disposiciones se opongan al cumplimiento de la presente ley.

CATEGORÍAS DENTRO DE LA ENSEÑANZA AGRÍCOLA.

La enseñanza agrícola destinada a poner en conjunción afortunada de la mejor manera posible, los esfuerzos del hombre y los de la tierra, para que los resultados de cosechas o de producción, ofrezcan con la mejor calidad del producto, la mayor suma de cosecha, ha obligado a los gobiernos a establecer divisiones en sus estudios, como ciencia, o como arte; según la condición social de los elementos que se pretenda ilustrar.

He aquí pues en el orden de las ideas las dos grandes líneas de separación que dividen a los hombres en sus fines de explotar el suelo.

Pero, en el orden de las exigencias naturales de la instrucción y de la economía nacional, tres categorías de explotaciones se establecen entre los hombres y la tierra.

Tres grandes grupos formados por la grande, la mediana y la pequeña explotación agraria, crean a su vez tres categorías de enseñanza agrícola, la de las universidades e Institutos superiores agronómicos, la de las granjas escuelas medias y la de la enseñanza agrícola en las Escuelas primarias del campo.

La gran propiedad con instalaciones modernas, superioridad científica en sus métodos de explotación, sus extensiones territoriales, sus máquinas, sus grandes obras y su complicada organización reclaman para su dirección técnica administrativa, al ingeniero agrónomo; reclaman al técnico agrícola en su más alta concepción científico-económica para los fines que estas grandes fincas o industrias agrícolas persiguen. Pero las Universidades principalmente tienen también como misión formar profesores para la enseñanza agrícola; administradores o directores de las altas oficinas agrícolas del Estado; y formar doctos investigadores que contribuyan con sus trabajos de laboratorio, gabinete o campos de experimentaciones, al progreso de la agricultura en general.

Las granjas escuelas de enseñanza media, tienen como misión interesante, para todos los países, ofrecerle a la mediana propiedad, clase semi-rica que hace fuerte y grande a las naciones que la poseen abundantemente, el grupo necesario de hombres capacitados en el arte de la agricultura, preparados dentro de un medio el más adecuado a la función que luego están llamados a desempeñar.

En estas granjas que cada día se especializan más, se deben extraer de las enseñanzas superiores, la parte que sea inmediatamente utilizable para la explotación del

dominio rural dándole a conocer los antecedentes científicos definitivamente adquiridos en los cuales se basan las prácticas que se realizan. En ellas los hijos de propietarios de la clase media, reciben la instrucción suficiente para ser útiles a sus padres.

Y finalmente las escuelas primarias rurales en su organización y fines, tienen como misión, iniciar a los niños de la campiña, hijos del pequeño propietario, que lo envía a esa escuela ansioso de que se le devuelva cuanto antes a su pequeño predio para utilizarlo, en los conocimientos elementales necesarios y para leer con provecho un libro de agricultura moderno, como dice un autor, despertando a la vez en sus almas infantiles la admiración y el amor al campo, a fin de que no piense en abandonarlo jamás.

Entre estas divisiones, particularmente entre las dos últimas, se crean por todos los Estados instituciones culturales agrícolas, que no sólo tienden a mantener en el ánimo del niño que sale de la Escuela rural y aún en los mismos de las granjas, las ideas que en ella recibieron, sino que le permiten ya en la edad adulta afianzar o ampliar sus conocimientos prácticos adquiridos, y tener en el funcionario que lo instruye un útil elemento de consulta en sus dudas. Además le permiten al agricultor que no ha podido recibir ninguna de esas enseñanzas anteriormente, recoger nuevos conocimientos aplicados para sus explotaciones, por más que en lo que a estos últimos se refiere, particularmente en países como el nuestro, el porcentaje de provecho que se obtiene es bastante escaso; pero creo que cualquiera que éste sea, la labor es ineludible y patriótica.

En este sentido las Secretarías de Agricultura establecen modalidades distintas para este género de difusión de la enseñanza abarcando el control de todas ellas, en muchos países.

La escala de la instrucción agrícola la representan por tanto:

Instrucción superior.—Las universidades; las escuelas superiores de agronomía; las estaciones agronómicas y las de especializaciones de fito-patología; química vegetal, etc.

Enseñanza media.—Escuelas medias de agricultura, para hombres y para mujeres; granjas escuelas prácticas en sus diversas especializaciones agrícolas o industriales para hombres y para mujeres.

Enseñanza primaria y popular.—Escuelas primarias rurales para niños y niñas; cátedras agrícolas ambulantes temporarias (agrónomos del Estado); cursos de agricultura en los cuarteles; oficinas de información y proyectos; campos demostrativos; concursos, ferias y exposiciones agro-pecuarias.

En realidad esta amplia derivación que hacemos dentro de la enseñanza primaria o popularización agrícola no es absolutamente exacta por cuanto el contacto de algunas de ellas, afecta tanto a la clase media como a la del pequeño agricultor, y en lo que a las exposiciones conviene, alcanza al interés de las enseñanzas superiores.

Servicios agrícolas.—Una de las misiones más interesantes y fecundas de los Estados en pro de la cultura agrícola, después de la instrucción en las escuelas, son los servicios de difusión y de educación campesina que contribuyan a formar una conciencia agrícola, firme y positiva, allí donde por condiciones especiales, otros alientos de enseñanza no han llegado.

Las conferencias prácticas, la instrucción en el manejo de materiales agrícolas modernos; los campos demostrativos; la propaganda en pro de las asociaciones agrícolas mutuales y cooperativas; el auxilio moral de la consulta hecha; la creación de clubs agrícolas formados por niños recién salidos de las escuelas rurales, para obtener el mayor éxito en un cultivo determinado, mediante la promesa de honores y premios materiales; los repartos de libros y folletos agrícolas populares, son fuerzas poderosas, que contribuyen a formar un ambiente agrícola más halagador cada vez y más optimista, cuando los Estados las ejercitan con constancia, inteligencia y firmeza.

En lo que a mi país se refiere, aunque no hemos todavía logrado encaminar en armónica conjunción todas estas fuentes de energías en pro del agricultor; algo hemos

hecho dentro de nuestra juventud republicana. Es posible que no todo resulte a estas horas a medida de nuestros más vehementes deseos; pero aun así hemos puesto en práctica algo, de tanto como se puede hacer en esta dirección.

El que tiene el honor de suscribir este trabajo, pudo con el mejor deseo y el auxilio eficaz del Doctor Lorenzo Arias, Sub-secretario de Agricultura, incluir y establecer en los presupuestos generales del año 1913 a 1914 de esa Secretaría, los servicios que más adelante se especifican; y pudo a la vez obtener la aprobación de su reglamentación por el Honorable Señor Presidente de la República, con solo leves variantes que no vale la pena tener en cuenta aquí, dándolo tal cual tuve el honor de presentarlo a la aprobación superior.

Estos servicios en su generalidad, constituyen un medio feliz de educación campesina, y cuando ellos son inteligentemente organizados y dirigidos, prestan un excelente bien al país que los desenvuelve.

REGLAMENTO DE SERVICIOS AGRÍCOLAS.

Considerando.—Que los nuevos servicios creados en favor de la Agricultura Nacional en la Secretaría del Ramo, reclaman para su mejor eficacia una adecuada reglamentación, que señale de modo preciso a cada funcionario el círculo de los deberes, las atribuciones y las acciones útiles que deben desarrollar.

Considerando: Que del mejor concepto que se tenga, para cada servicio creado, se habrá de derivar una natural disciplina y un orden, que es fuerza establecer y que necesariamente debe imponerse para que dentro de los respectivos límites señalados a cada funcionario no pueda uno invadir atribuciones de otro, ni unos servicios pugnar a su vez por interpretaciones erróneas con otros, ni modificar o variar o mistificar ninguno de ellos, debiendo además tenerse en cuenta que todos de consuno tienden a una finalidad que es la de proteger y amparar por los medios que más adelante se especifican a la Agricultura Nacional.

Considerando: Asimismo que a todos los agricultores de la República interesa apreciar y conocer las ventajas que cada uno de los nuevos servicios creados les ofrece y los derechos que sobre cada uno de ellos pueda tener para utilizarlo según sus necesidades.

Vengo en dictar el presente Reglamento de Servicios Agrícolas:

ART. 1. De acuerdo con el artículo 36 de la ley del Poder Ejecutivo y de los presupuestos generales para el año fiscal de 1914 a 1915, se crean la Inspección General de Agricultura, los Servicios de Agrónomos y Veterinarios del Estado, las Oficinas de Estadística Agrícola; la de Consultas y Proyectos Agrícolas, la Oficina del Boletín Agrícola, el Laboratorio de Química Agrícola, la Delegación Permanente en el Instituto Internacional de Agricultura de Roma (Italia), y Centros de Recría en cada Provincia.

ART. 2. Todos estos nuevos servicios anexos al Departamento de Agricultura de esta Secretaría de Agricultura, Comercio y Trabajo, dependen de la Dirección de Agricultura, en sus aspectos técnicos como lo están las granjas escuelas, la estación agrónoma, las exposiciones agrícolas, y como deberán estar cuantos otros servicios se creen para la protección agraria nacional.

ART. 3. *Inspección general de agricultura.*—El Inspector General de Agricultura, tendrá a su cargo la inspección de los servicios de agrónomos del Estado, proponiendo por conducto de la Dirección de Agricultura cuantas medidas estime procedentes para la mejor eficacia de los mismos. Visitará una vez al mes por lo menos las Granjas Escuelas, Centros de Recría y demás instituciones dependientes de la Secretaría, con el fin de exigir de los directores o encargados de ellos el cumplimiento de las leyes y reglamentos vigentes y demás disposiciones que dictase el Secretario, para su mejor funcionamiento. De cualquier deficiencia que notare, podrá llamar la atención a su jefe inmediato para su atención y para tomar las medidas que se estimen oportunas.

ART. 4. *Provisión de plazas.*—Las plazas técnicas de nueva creación con destino a los servicios del Estado, podrán ser provistas por nombramiento, concurso o examen de suficiencia según se estime conducente para el mejor servicio, y en el caso de no existir titulares cubanos en número suficiente, podrá el Secretario de Agricultura, Comercio y Trabajo, nombrar titulares extranjeros.

ART. 5. *Servicios agrónomos y veterinarios del Estado.*—Los agrónomos y veterinarios del Estado, de acuerdo con la Dirección de Agricultura, se pondrán a disposición de los agricultores y ganaderos, a cuyo efecto harán la distribución correspondiente de servicios diarios, de manera, que por lo menos, en aquellas provincias de municipios numerosos puedan rendir una visita al mes a cada uno de ellos, si es posible hasta tanto este servicio se aumente con nuevo personal para su mejor cumplimiento y eficacia. En cada municipio evacuarán las consultas que se les hagan, bien sean estas verbales, escritas o de carácter práctico y aplicado, tanto en lo que a cultivos, cría, perfeccionamiento y enfermedades de animales e industrias agrícolas se refieren, cuanto a lo que se inquiera de ellos sobre aplicaciones de leyes agrarias, de linde, economía rural, precios de productos, solicitud de semillas e implantación de campos demostrativos en predios privados. Visitarán las Granjas Escuelas inspeccionarán los Centros de Recría y todas aquellas dependencias que siendo del Estado, tengan relación con sus funciones. Visitarán las escuelas rurales para auxiliar en sus enseñanzas agrícolas a los señores profesores y ofrecerán conferencias en esas escuelas, ante sociedades y labradores, sobre cultivos, ganadería y agricultura en general. Propenderán al mejor desarrollo de la economía agrícola nacional, sanidad e higiene rural y al desarrollo de asociaciones agrícolas de todas clases. Tienen por tanto como misión útil, sancionada por el éxito de otros países, la de desarrollar una obra educadora de hábitos y costumbres agrícolas por sobre todo el país, y la de ser instructores y vulgarizadores de los principios científicos aplicados a la agricultura en general, y que ya estén sancionados por las prácticas y las experiencias realizadas en los Centros de Investigación Agronómica.

ART. 6. Los agrónomos y veterinarios del Estado, residirán donde les designe la Secretaría de Agricultura, Comercio y Trabajo.

ART. 7. Los agrónomos y veterinarios del Estado, anunciarán a los municipios respectivos con la debida anticipación, los días señalados para visitar cada término, con el fin de que por la prensa periódica de cada localidad, o por otro medio que el Señor Alcalde Municipal estime conveniente, lo anuncie a cultivadores, ganaderos e industriales agrícolas.

ART. 8. Los agrónomos y veterinarios del Estado, consignarán en un registro especial, con número de orden y fechas, las reseñas relativas sobre sus visitas, fines de las consultas, consejos y dirección dados a los interesados, trabajos emprendidos y demás datos pertinentes, de todo lo cual darán cuenta a la superioridad, mensualmente.

ART. 9. Los agrónomos y veterinarios del Estado, están en el deber de guardar la necesaria reserva sobre las consultas de carácter privado que se les hagan, particularmente, aquellas que se refieran a apreciaciones o consejos a empresas agrícolas y a todas aquellas que puedan dar lugar a adquirir carácter de reclamo con perjuicio de los demás agricultores y ganaderos. En los casos de consultas de orden técnico o de cuestiones que supongan divergencias de criterio o de intereses entre convecinos, se exige a los agrónomos y veterinarios, la mayor discreción y prudencia en sus respuestas, pudiendo dar a la publicidad en los periódicos locales aquellas consultas de carácter general y beneficioso para todos los que se las hicieren; pero con reserva o no del nombre del interesado según éste lo estipule. Estos funcionarios tienen el deber en todos sus actos de inspirar la más absoluta confianza a toda la comunidad agrícola a que pertenezcan.

ART. 10. Los agrónomos y veterinarios del Estado, deberán publicar artículos de vulgarización agrícola en los periódicos de sus Provincias; pero no podrán entrar en polémicas periodísticas, ni hacer reclamos a favor de fabricantes de máquinas agrícolas o industriales, vendedores de semillas o abono, ganados de ninguna clase, ni

producto o materia alguna que se preste a estimular negociaciones comerciales de índole privada. De los artículos publicados, remitirán copias a la Dirección General por conducto de la Inspección de Agricultura, así como también remitirán los datos que se exigen en el artículo 8 con el fin de ordenar los expedientes a que dieren lugar, mediante un Registro Especial que llevará dicha inspección.

ART. 11. Los agrónomos y veterinarios del Estado, prestarán su concurso en lo que sea menester a los compradores de abono y forraje para los animales; tomarán cuando lo juzguen conveniente para los fines de comprobación y análisis, muestras de abono o tierras u otros productos para remitirlos al Laboratorio Central de la Dirección de Agricultura.

Cuando en los laboratorios provinciales de servicio público enclavados en las Granjas Escuelas se disponga del personal necesario, podrán estas muestras ser enviadas a ellas, también con los fines de análisis, consultas y demás necesidades que los agrónomos deseen satisfacer para el mejor cumplimiento de su misión, quedando terminantemente prohibido recomendar los abonos por sus marcas comerciales.

Una vez que estos laboratorios provinciales funcionen, el Laboratorio Central de la Dirección de Agricultura, podrá ejercer acción dirimente en las dudas que sobre análisis se presentasen.

ART. 12. Los agrónomos y veterinarios del Estado, deben hacer conocer a todas las Provincias las instituciones agrícolas creadas por el Estado a su favor y los medios de que se pueden valer los campesinos para su utilización, deben asimismo estimular la celebración de modestas ferias locales y concursos agrícolas, proponiendo con anticipación a la Secretaría de Agricultura, Comercio y Trabajo, por mediación de su Jefe, por si ésta lo estimare pertinente, la concesión de premios y diplomas, recabando a la vez de los municipios respectivos otros estímulos semejantes: intervendrán en las celebraciones del día del árbol, del día del pájaro, y demás de igual o parecida índole. Obtendrán cuantos datos y antecedentes convengan para las formaciones de estadística agrícola que la superioridad solicite; así como la de los precios y salarios agrícolas locales: deberán procurar el fomento de asociaciones y mantener viva la confianza de todos los agricultores, ganaderos e industriales en pro del desarrollo agrícola nacional. Podrán asimismo solicitar de la Secretaría de Agricultura, Comercio y Trabajo, semillas y estacas para su reparto entre agricultores, dando cuenta de su repartición en cada caso.

ART. 13. Los agrónomos y veterinarios del Estado, de acuerdo con los Superintendentes de Escuelas y previa autorización del Secretario de Instrucción Pública y Bellas Artes, instituirán un día del año, que se denominará del "Concurso del Maíz" entre los niños de las escuelas rurales de cada Provincia, con el fin de premiar a los alumnos y a las escuelas que mejores ejemplares presenten al concurso.

Dicho maíz deberá ser cultivado y cosechado en el Jardín Escolar de cada escuela rural por los alumnos de ella, debiendo hacerse el envío del maíz selecto en mazorcas, bien sea por escuela o por alumnos o por grupos de alumnos de cada escuela, a fin de discernir dos premios en libros, objetos útiles o en metálico entre los alumnos, y seis diplomas de mérito para las escuelas de cada término municipal que los conquisten, enviando al efecto los mejores ejemplares con memorias explicativas sobre su cultivo, abono empleado, riego y clase de tierras cultivadas, firmada por los alumnos remitentes y el profesor de cada escuela.

Las mazorcas se enviarán a las granjas escuelas para la selección y premio de los mejores ejemplares, que discernirá un jurado compuesto por el presidente del consejo, el superintendente provincial, el agrónomo del Estado, dos agricultores propuestos por el Gobernador Provincial y los profesores de las Granjas, siendo suficiente la presencia de tres miembros para tomar acuerdo.

Hasta tanto se consiga en los presupuestos generales, la cantidad correspondiente para los premios en libros, objetos útiles o en metálico y para los diplomas, el Secretario de Agricultura, Comercio y Trabajo, suplirá por el Capítulo de Imprevistos los gastos que esta fiesta de la niñez ocasione.

Toda otra iniciativa que tienda al estímulo o enaltecimiento de la agricultura cubana podrá ser sometida por el agrónomo del Estado a la consideración del Director de Agricultura.

ART. 14. Los agrónomos y veterinarios del Estado, procurarán cuando el estado de la Secretaría de Agricultura, Comercio y Trabajo lo permitan, y una comunidad agrícola lo desee, que se ofrezcan con su concurso y el de otros profesores, cursos especiales y breves, de agricultura, industria o ganadería de carácter práctico y en períodos convenientes de diez o quince lecciones, así como conferencias agrícolas a los maestros rurales; podrán asimismo recabar, cuando un exceso de trabajo lo reclame de modo evidente, el auxilio de otro agrónomo o veterinario que con carácter temporal se nombre por la Secretaría del Ramo.

ART. 15. *Oficinas de Consultas y Proyectos Agrícolas.*—La Oficina de Consultas y Proyectos Agrícolas con su personal correspondiente, auxiliará a los agrónomos y veterinarios del Estado en las consultas que éstos a su vez les hicieren sobre los puntos de su competencia, y despacharán todas las consultas públicas que por escrito se les hagan con el auxilio del Laboratorio Central, sobre tierras, abonos y otros productos que para los fines de explotaciones agrarias se persigan. Realizará previos los antecedentes que se le remitan, los estudios de proyectos y presupuestos en todo lo que a las ramas de la agricultura, ganadería e industria agrícolas corresponda, remitiendo planos, marchas sistemáticas de las explotaciones, costos de edificios y de máquinas con sus planos de emplazamiento y costo de aperos o ganados con los cálculos de rendimientos probables de la empresa que se les consulte, trasladándose uno de los técnicos en caso necesario al lugar de la consulta. Tanto para responder a consultas como para publicar en el Boletín Agrícola, realizará estudios técnicos comparados, relativos a la agricultura, ganadería e industrias de transformación de productos agrícolas de otros países. Informará sobre mercados propios para nuestros productos, clases de envases y manera de obtenerlos, e irá clasificando y ordenando la legislación agraria nacional para su publicación; pudiendo informar al Secretario de Agricultura, Comercio y Trabajo, con vista de otras leyes extranjeras las reformas que nuestra legislación agrícola reclame para su mejor eficacia. La oficina de consultas y proyectos agrícolas, podrá solicitar de los agrónomos y veterinarios del Estado, y de las demás dependencias de la Secretaría de Agricultura, Comercio y Trabajo, así como de entidades y empresas privadas que se presten a ello, todos los antecedentes que le sean necesarios para su más cumplida función, debiendo fiscalizar y aprobar los trabajos técnicos que deban o puedan publicarse en el "Boletín Agrícola."

ART. 16. *Boletín Agrícola.*—El Boletín Agrícola se publicará los días primero de cada mes y se repartirá gratis entre todos los agricultores, sociedades agrícolas y empresas de la República que lo soliciten, y a su vez establecerá el canje con todas las oficinas y publicaciones de su clase de todo el mundo, para cuyo efecto llevará en índice adecuado un registro general de libros y boletines que sean de su competencia. La sub-Secretaría de Agricultura, determinará el número de ejemplares que mensualmente deban publicarse, y el crédito que para la adquisición de obras técnicas deba disponerse con cargo al material de la oficina de Consultas y Proyectos.

ART. 17. Este boletín no debe tener el carácter técnico que solo corresponde a publicaciones pertenecientes a centros de investigación científica; debiendo tanto en las exposiciones y lenguaje de los trabajos de enseñanza, vulgarización e información que en él se publiquen, adaptarse a la condición del público para quien principalmente se dedica, tendiendo a la vez a darle siempre un marcado sello de información gráfica.

ART. 18. Asume el carácter de Director del Boletín, el Secretario del Ramo; el de Jefe de Redacción el Director de Agricultura y se considerarán obligatoriamente redactores del mismo, el Inspector General de Agricultura, los catedráticos de las Granjas Escuelas, los profesores de la Estación Agronómica, los Agrónomos y Veterinarios del Estado y cuanto otro funcionario o empleado técnico se encuentre adscrito a la Direc-

ción de Agricultura. Todos los trabajos serán supervisados por el Jefe de la Oficina de Consultas y Proyectos Agrícolas.

ART. 19. Publicará el Boletín en calidad de colaboración tres trabajos mensuales; dos de autores nacionales y el otro de autor extranjero que no perciban sueldo de la Secretaría de Agricultura, Comercio y Trabajo; pero que serán retribuidos en la cantidad que en los presupuestos nacionales, se indica, debiendo en cuanto sea dable diversificar los trabajos de redacción y colaboración con el fin de darle mayor atracción e interés al citado Boletín. Asimismo se evitará la publicación de trabajos demasiado extensos y difusos, quedando prohibidas las polémicas periodísticas en su seno, dado que la primordialidad del Boletín es de mera vulgarización.

ART. 20. Todos los trabajos que se publiquen en el Boletín educador deben tener relación inmediata con el fin que en dicha publicación se persigue, bien sean de índole agrícola, zootécnica, industrial o económica.

ART. 21. *Laboratorio de Química Agrícola.*—El Laboratorio de Química Agrícola, realizará los análisis de tierras, abonos y productos agrícolas que por conducto de la Dirección de Agricultura, le remitan los agrónomos y veterinarios del Estado y los particulares que para fines exclusivos de interés agrícola le soliciten. El Laboratorio de la Estación Agronómica en los casos de exceso de trabajo, auxiliará al Laboratorio de la Dirección de Agricultura, hasta tanto el servicio de los Laboratorios Provinciales en las Granjas Escuelas quede establecido.

El Jefe del Laboratorio de la Dirección de Agricultura, llevará un Registro de Entradas y Salidas y los Libros de análisis necesarios, documentando y conservando todos los comprobantes que para garantía de los trabajos realizados sean menester. El Jefe del Laboratorio firmará bajo su responsabilidad todos los trabajos analíticos que en el Laboratorio se realicen.

ART. 22. Toda persona domiciliada en la República, que compre abono o forrajes o semillas, para abonar de dos hectáreas de tierra en adelante o alimentar más de tres bestias de raza o de clase criolla selecta, podrá pedir al laboratorio gratuitamente por los documentos reglamentarios; que se compruebe la verdad del título o valor en fertilizantes del abono adquirido o el valor en sustancias alimenticias del forraje, debiendo en ese caso tomar previamente las muestras en presencia de dos testigos, del comprador y vendedor, haciendo tres muestras mezcladas convenientemente y tomadas del mayor número de sacos debiendo llenarse tres frascos que no contendrán menos de doscientos cincuenta gramos (para los abonos), o quinientos gramos (para los alimentos o forrajes). Estos frascos se sellarán con las especificaciones necesarias para su debida comprobación de autenticidad; dos de ellos serán remitidos al Laboratorio Central, y uno será conservado por el vendedor para su garantía. Cualquiera que fuere el dictamen químico, no tendrá ulterior consecuencia para el vendedor, salvo la acción privada del comprador, exceptuándose tan sólo la Provincia de Pinar del Río, en donde rige la Orden número 214 de 7 de octubre de 1901.

ART. 23. *Instituto Internacional de Agricultura de Roma—Delegación.*—El delegado técnico permanente al Instituto Internacional de Agricultura de Roma, enviará mensualmente a la Secretaría del Ramo, "Memoria," detallada de los trabajos y estudios realizados en el instituto, de sus distintas secciones, tratando en todos los casos de hacer labor de adaptación y de información utilizable en favor del país que representa en los diversos estudios de agronomía, ganadería, economía rural, instrucción agrícola y cuanto sea motivo de atención por parte de ese instituto.

Deberá asimismo tener al corriente a la Secretaría de Agricultura, de cuantos trabajos y progresos se realicen en favor de la agricultura en general, en el país de su residencia y en otros si le es dable trasladarse a ellos, para su estudio e informaciones, procurando por todos los medios que su voluntad le aconseje, dar a conocer nuestro país, y prodigar en forma de anuncios y folletos todo cuanto pueda contribuir al prestigio y crédito del país y estímulo e inmigraciones para la República de Cuba.

ART. 24. *Estadística Agrícola*.—La Oficina de Estadística Agrícola, tendrá a su cargo todo lo concerniente a la formación de las estadísticas de la producción agrícola y de las industrias rurales, o sean las no manufactureras.

Recabará de los agrónomos del Estado, de la Oficina de Consultas y Proyectos y por todos los medios que sean accesibles para el mejor servicio de su función, los precios de cosechas, salarios agrícolas y cuanto otro dato convenga conocer.

ART. 25. *Centros de Recría*.—Una vez establecidos los Centros de cría para cada Provincia en el lugar que previamente designe, el Secretario de Agricultura, Comercio y Trabajo con las tierras, ganados y servidumbre necesaria, quedarán sujetos para su mejor servicio y conservación a la fiscalización del Inspector General de Agricultura en primer término y de los Agrónomos y Veterinarios del Estado en segundo término.

ART. 26. Estos centros de cría, prestarán servicio gratis y público con su ganado para cruzamientos con los de otras razas, debiendo llevarse un Libro Registro de servicios prestados y expedir talón de comprobación al interesado según lo efectúan las Granjas Escuelas para los efectos de la inscripción en el Registro Genealógico de la Secretaría de Agricultura.

ART. 27. Los capataces encargados de estos centros, están obligados a poner la mayor atención en la custodia y cuidado del ganado a su cargo, debiendo pedir al veterinario las visitas necesarias para la seguridad de salud y conservación de todos los ejemplares.

No obstante prestar el servicio público los sementales para cruzamientos, cada centro de cría deberá procurar obtener ganado criollo de la raza pura que cada uno de ellos posea, con el fin de sacarlos en la oportunidad debida a pública subasta, con la garantía de su inscripción en el Registro General de la Secretaría de Agricultura.

Para el servicio público de los sementales, se atenderán a las disposiciones de carácter interior que dicte la Dirección de Agricultura, de acuerdo con el doctor en Veterinaria adscrito a dicha dirección.

ART. 28. *Disposición General*.—El Secretario de Agricultura, Comercio y Trabajo queda encargado del cumplimiento de este reglamento, y de su publicación en la forma más adecuada para que sea conocido por todos los elementos productores de la República

La Escuela Rural Primaria.

Vistos los elementos bien diversos y bastante eficaces de que pueden disponer los gobiernos para extender la educación agrícola campesina en todas partes; corresponde ahora decir lo que pudiera ser la escuela rural cubana y los obstáculos con que se tropieza para que llene su saludable función nacional.

En primer término la escuela rural tiene una función moral y social del mayor interés para nosotros, como para todos los países.

La instrucción primaria cualquiera que esta sea, tiene la virtud de dejar en el ánimo del niño huellas indelebles, que están destinadas a ejercer gran influencia en el futuro de toda su vida, por tanto si al crear la escuela rural partimos de esta convicción se hace necesario pensar consecuentemente que el alma de esa escuela debe ser agrícola, que el profesor debe ser un hombre amante de las campiñas y que las enseñanzas que en ella se desenvuelvan deben impregnarse, como dice una interesante circular del Gobierno de Bélgica expedida en 1913, de "generalidades, inspirando primordialmente su programa, en la necesidad de una educación adecuada a la vida agrícola que en el futuro le espera a ese niño."

La enseñanza rural no debe perder nunca este punto de vista esencial, procurando el maestro en todos los momentos despertar en las jóvenes almas de los alumnos, con el afecto a las virtudes del trabajo, el santo amor a la agricultura, como la madre en su primera infancia le inculca el santo temor a Dios.

En la edad en que los niños deben emprender estos estudios, están en los momentos más propicios para dirigirles sus sentimientos y aficiones. La memoria fresca y vigorosa guarda perfectamente—no empleando métodos fatigosos, sino los métodos que

la pedagogía aconseja—todo lo que se le confía, y lo guarda entonces, no como un mero recuerdo, sino como una convicción. La inteligencia a esa edad abre todas sus puertas, ansiosa de recoger el fruto de las enseñanzas que se le presenten atrayentemente; y más ansiosa de iluminarse con los resplandores de las verdades que se les expongan; las impresiones así recibidas son por lo tanto muy vivas y caen en su ánimo como la luz en la sombra. Sus sentimientos e inclinaciones, vírgenes, sin brújula que las guíe, necesitan un apoyo y una confianza que los oriente, y por tanto, se inclinan a seguir aquel camino que con más fe o más convicción se les indique. Son en esa época los niños—hablo en términos generales—“como los árboles que crecen y se desarrollan según nuestros cuidados y deseos, y son al fin lo que nosotros queramos que sean.”

Si no lográsemos nada más que despertarles la fe y el amor a la causa de la agricultura, ciertamente que la obra de la escuela rural no se habrá completado; pero en el orden de las conveniencias nacionales, le habríamos ofrecido por lo menos a nuestras despobladas campifías cubanas, un creyente.

Muchas opiniones, muchos criterios distintos se exponen sobre las enseñanzas de la escuela rural; pero mi opinión la sintetizo ahora y la analizaré después, diciendo, que aparte de la función moral de que he hablado, la otra condición ineludible es que el maestro sepa agricultura. A este respecto dice Richard en su “Pedagogía experimental” que cuando Pestalozzi intentó crear una escuela con enseñanza agrícola, el gran pedagogo fracasó “porque carecía de práctica,” y la mayor parte de las escuelas rurales deben su fracaso a esta causa.

Desde luego debe aceptarse que una instrucción general les es necesaria; pero yo me fijo en la influencia de la acción del maestro, y del medio o del ambiente que se le dé a estas escuelas, como punto principal para su éxito. Una enseñanza de aritmética les es debida; pero al ofrecerles esta materia los problemas que se les planteen deben estar relacionados con las cuestiones agrícolas; y esto mismo corresponde con la enseñanza de la geografía, o de la moral o del dibujo, etc.

Aun debe decirse, que estando poseídos de los métodos de enseñanza que se deben desarrollar en las escuelas primarias, la enseñanza de la aritmética debe ofrecérseles no sólo como una necesidad de cultura, para los futuros destinos de su vida del campo, sino para satisfacer una necesidad de su espíritu, porque la aritmética tiene además de su condición de utilidad práctica, una función pedagógica intensa sobre la mentalidad del niño, despertando sus aptitudes inteligentes para el razonamiento; y del mismo modo la enseñanza de la moral y aún las de las más elementales nociones de líneas geométricas, lo disponen en su espíritu para razonar con provecho. Estas enseñanzas le son necesarias.

Empezando pues por métodos de intuición y de análisis, el razonamiento del niño brotará con estas enseñanzas, como la fruta de un árbol.

El método de exposición, la competencia agrícola y el verbo del maestro, completarán la obra educacional del niño campesino. La presentación ante el niño del porqué de tales o cuales operaciones agrícolas, acompañado de experiencias que le muestren con claridad esos porqués vistos por él y hasta manualizados por él, lo llevarán a ese razonamiento de las cosas que relaciona y sintetiza todos los hechos por él observados y analizados.

Yo leo en algunos libros de texto y en circulares, que no se debe pretender hacer un profesional de ese niño, y tal vez tengan razón; pero aparte de que esto expuesto así, se presta a apreciaciones muy diversas, si la escuela rural, primera y última etapa de la instrucción del hijo del pequeño cultivador, no le ofrece por lo menos una cultura agrícola pre-vocacional, y no lo deja dispuesto a que por razonamiento y convicción pueda efectuar después una labor agrícola más racional que la que su padre realiza en el pequeño predio ¿qué finalidad útil trae la escuela rural, en ese sentido?

No debemos olvidar nosotros que esta escuela es la llamada a contribuir a los mejoramientos de los cultivos, porque el campesino cubano, no es el campesino belga o

francés que realiza prácticas racionales en sus pequeñas fincas, donde el riego y el empleo de abonos le son familiares, y por tanto el niño desde que hace vida de relación los contempla y los llega a practicar después; pero el niño cubano, que en su finca pequeña observa métodos poco adecuados, tiene que ser quien estimulado por lecturas, conferencias de agrónomos, campos demostrativos y por propio análisis luego y comparación de lo que vé en su casa y de lo que vió en la escuela, es llamado más tarde a ser el reformador del sistema agrícola, del método rutinario que entre nosotros se sigue: por tanto su enseñanza en la escuela rural debe tener esa tendencia educadora, que entre nosotros podemos decir natural.

Por esto yo no creo en la eficacia de la escuela rural que termina sus estudios en el 5° ó 6° grado o a los 10 años aproximadamente, según se desprende de la opinión de algunos señores pedagogos; condición que aceptan, según dicen, por fuerza o realidad de las cosas, y si esta es la razón, implícitamente se entiende que aceptarían una extensión mayor a otros grados si les fuera posible, y si esto es así, de hecho reconocen que la escuela rural que termina de modo tan temprano no es eficaz y si no es eficaz por la misma fuerza de las cosas tenemos que hacer que lo sea. En aquellos países que estén sometidos a esta disyuntiva, esto es, a que el niño salga de la escuela primaria agrícola, precisamente cuando están en la edad apropiada para asimilar sus enseñanzas, yo les digo, que un gran impulso patriótico los debe enérgicamente determinar a que las cosas no sigan así, porque la escuela agrícola primaria es esencial para el progreso de la vida nacional.

No es dudoso que a esa primera edad, el niño auxiliado por los métodos pedagógicos que a su alcance están, llegue a fijar la atención de los hechos que se le presenten mucho mejor, como dice un autor, que un niño de esa misma edad que no reciba tales enseñanzas; pero seguramente que nuestra obra no será cabal si a esa edad lo devolvemos al predio de sus padres.

Habremos ciertamente hecho algo, muy poco en la escala de la utilidad agrícola; pero no habremos hecho todo lo necesario porque a esa edad no se puede hacer labor adecuada para moldear a un futuro campesino más consciente y razonador de las operaciones que en su campo realiza a diario, dado que las ideas que le sugieran la sucesión de hechos o experiencias que en la escuela haya visto o aprendido, no las encadenará, no las sistematizará, no las clasificará, no las sintetizará debidamente para que del conjunto de todo, se forme la conciencia profesional que luego debe guiarlo.

La selección de semilla, la preparación del suelo, el crecimiento de la planta, el nacimiento del fruto, la cogida de la cosecha cada acto de los cuales lleva o exige un análisis y un razonamiento que obligan a la mentalidad del niño a establecer relaciones entre cada una de esas verdades, no están al alcance de un niño de 10 años, para hacer de ellas la valoración y apreciación debidas; pero sí lo están a la edad de 11 a 13 años.

El niño de 10 años carecería de energía y disciplina mental suficiente para observar, analizar, razonar, cada uno de estos actos y relacionarlos con el otro, porque a esa edad no se desprenden ideas, o si se desprendieren, serán como fruto prematuro que cae verde del árbol, para no madurarse.

Si alguna enseñanza posee un extenso arsenal de elementos de instrucción dentro de la pedagogía experimental, cuya enseñanza experimental es concomitante con los primeros y últimos grados de esa escuela, es la agricultura. En la botánica, en las lecciones de la naturaleza, etc., tiene el profesor un amplio campo que recorrer para espigar con éxito y triunfar. Desde la más sencilla o elemental experiencia de germinación o respiración de las raíces, por ejemplo, hasta las otras más complicadas de las herborizaciones y el jardín escolar, tiene la pedagogía encerrados o englobados, materia bastante para desenvolver todos sus métodos.

Se objeta por algunos pedagogos, según he dicho, que no es posible extender más allá del 6° grado, la enseñanza agrícola en las escuelas rurales; pero a mi juicio este obstáculo, producto de la educación y de las necesidades campesinas, puede ser al fin

vencido con dos corrientes contrarias a esta, que son: la propia escuela, y la propaganda bien realizada por los agrónomos del Estado, quienes con sus medios de persuasión y la instrucción ambulante, y la constante predicación de sostener a los niños en las escuelas hasta la edad adecuada de 11 o 12 años, a lo menos irán venciendo ese obstáculo.

He dicho que la propia escuela es una de las corrientes que tenemos a nuestra disposición, y así es en efecto. Hágase o realícese la enseñanza agrícola, tal como debe hacerse quitándole toda enseñanza que no corresponda a la condición de los niños del campo y que no les sea indispensable; désele a la escuela el ambiente propio de escuela agrícola que ella debe tener, sin el espíritu estrecho de economía que se suele tener; dóteselas con todos los recursos que le son necesarios; háganse sus alrededores higiénicos, atractivos, bellos con árboles y flores, y cultivos bien dirigidos; dispóngase de buenos edificios para ellas, ventilados, con luz conveniente; foméntese un museo agrícola, que se encarguen luego de enriquecer los propios niños; téngase buen espacio para el jardín escolar donde no sólo se pueda hacer enseñanza de cultivo, sino estudios comparativos entre un cultivo bien dirigido y otro mal realizado; metodícese toda la enseñanza debidamente; dénsese al profesor todos los estímulos para que pueda vivir en esa escuela con su familia de manera que piense lo menos posible en dejar la escuela campesina por la urbana, procure ese profesor, inspire confianza a todos los padres de familia de su vecindad y procure ser su consejo en sus dudas de cultivador; ofrezcánsese a los niños libros de agricultura para leer, y que éstos tengan lecturas atractivas o entretenidas con profusión de láminas; créense al principio en los mejores distritos, como se hizo en nuestra República hermana del Uruguay, 50 ó 60 ó 70 escuelas en Cuba para ir aumentándolas todos los años, y no se olvide jamás que el museo agrícola y el jardín escolar tienen una extraordinaria función pedagógica, porque si el primero es como un libro abierto constantemente ante los ojos del niño; el otro es otro libro que ellos poco a poco van hojeando y sacando de él todas las enseñanzas que con sus propios trabajos realizan.

Háganse, fúndense así las escuelas rurales, y el escollo de que antes he tratado se irá venciendo, poco a poco.

Puédese de hecho, asimismo con el fin de facilitar este resultado dividir la enseñanza en dos secciones; hasta el sexto grado la primera, con clases diarias, y la segunda de séptimo y octavo con clases alternas por ejemplo, o haciendo de modo que esta enseñanza se ofrezca en ciertos períodos del año.

Y si aún esto no diese todos los resultados, el gobierno como una medida para la salud nacional puede hacer obligatoria la asistencia a las escuelas en los años últimos.

Procúrese tornar en realidad el artículo 13 del Reglamento de Servicios Agrícolas, vigente entre nosotros, publicado en este trabajo por virtud del cual se instituye como en otros países existe el "Día del Maíz." Estimúlese el celo y el amor propio de los niños y la escuela rural cubana como la de cualquier otro país dará fecundo fruto. En una palabra hágase a la juventud campesina amante y apta para su función.

En los propios Estados Unidos se ha tropezado con la realidad de que las escuelas rurales, no daban el fruto que de ellas era de esperar, y una comisión de hombres ilustres, después de detenidos estudios y consultas llegó a la conclusión de que la edad de 11 a 14 años era la edad propia para ingresar en esos estudios, porque esta edad autoriza a realizar programas de enseñanza en grado más elevado.

Esa misma comisión aceptó que se debía hacer un mayor desarrollo y una enseñanza constante de demostración en los campos de las escuelas y fuera de ellos.

El mayor escollo con que tropiezan las escuelas rurales en muchas partes, para su éxito es la falta de preparación del maestro en los estudios de agricultura y otro no menos importante es el sistema que se sigue semejante a un escalafón por virtud del cual, los maestros que empiezan su carrera, se destinan a los distritos rurales, con la esperanza de pasar al cabo de unos años a las escuelas urbanas.

Este no es un sistema feliz; de esta manera nunca habrá buenos maestros rurales en los países que lo sigan: el sistema a mi ver debe ser todo lo contrario.

Es mucho más apostólica la misión del maestro rural que la del urbano; y en lugar de ponerle por delante un estímulo que le haga esperar salir algún día de esa escuela, se le debe poner en condiciones mejores que los maestros urbanos, para que tengan la natural tendencia a permanecer en esa escuela: Un sueldo mayor, un hogar conveniente para él y su familia y la esperanza de un retiro decoroso al cabo de un número de años de servicio, acabarán por hacer maestros rurales útiles.

La falta de preparación agrícola ha sido hasta ahora otro inconveniente; pero ya Cuba posee escuelas normales de maestros, en cuyas enseñanzas entra esa rama primordial de la escuela rural, y si juntamente con esto hiciésemos una ley que autorizase darles, como he dicho, mejor sueldo a los profesores rurales y a las profesoras, y ofrecerles las demás garantías que he señalado, dotando las escuelas por esa misma ley de todo lo necesario para la enseñanza agrícola y ordenando que a medida que fueren saliendo profesores de las normales, se fuesen eligiendo aquellos distritos mejores o más adecuados, podríamos pensar con razón que no pasarían muchos años sin que la agricultura del pequeño agricultor se dignificase.

No se olvide que el maestro es el encargado de inclinar la vocación del niño hacia su predio, y que es el artesano en cuyas manos se pone la levadura para moldearla como pedagogo; para moldearla como agricultor y para moldearla como ciudadano.

La enseñanza media.

En la enseñanza media, agrícola, caben dos formas de escuelas, dentro de las cuales, dos tendencias como es natural se manifiestan; y dentro de las cuales también, varían los años de vida escolar o de vida de granja de uno a tres. En estas dos manifestaciones de la granja-escuela media, una de ellas, la teórico-práctica, tiende a estar más cerca de la enseñanza superior de los institutos agronómicos por su organización; mientras la otra, parece acercarse por sus fines casi exclusivamente prácticos a la escuela rural.

Las escuelas de especializaciones de la enseñanza agrícola o industrial, se extienden por lo demás a la propia instrucción superior, con un éxito extraordinario.

Las granjas escuelas de especialización agrícola o agrícola-industrial, carecen de programa o Plan de estudio, propiamente dicho, limitándose el profesor a razonar y explicar sobre el propio campo las operaciones que los alumnos vayan realizando. Su tendencia es formar hombres prácticos en cualquier explotación. Pero es evidente que algunas industrias agrícolas reclaman del alumno, determinados trabajos de laboratorio por elementales que estos puedan ser, como por ejemplo ocurre en ciertas escuelas de lechería, y en este caso un sencillo laboratorio provisto de lo necesario es indispensable.

En estas escuelas, la explotación motivo de la enseñanza toma el tipo de una explotación particular, en la que se hace intervenir a los alumnos en todos los trabajos de la granja, tanto en los de carácter manual, como en los de carácter económico, percibiendo por ello cierta retribución o salario.

Indudablemente que esta clase de escuelas es de una finalidad utilísima, porque preparan cumplidamente a los alumnos de un modo cabal, en aquellos cultivos o industrias que se tenga interés de extender en un país.

Esta clase de escuelas, por ejemplo, entre nosotros repartidas por nuestras Provincias podrían preparar a muchos jóvenes campesinos salidos de las escuelas rurales, en distintas especializaciones que tenemos necesidad de extender y de perfeccionar.

Una buena lista de explotaciones poseemos como la del café, cacao, arroz con sus máquinas de beneficio; la de maíz y otros granos para harinas, las de maní, coco y otras plantas con sus fábricas de aceite; las de yuca agria (*Manihot* utilísima) para hacer almidón; las de plantas textiles para el desfibrado; y las explotaciones modernas de lechería, avicultura, apicultura, etc.

Aun algunas de estas granjas, como las destinadas al cultivo del café—por ejemplo—que es en general un cultivo de nativos, y de medianos propietarios, que ya hoy nos

ofrece en su rehabilitación más de 350,000 quintales de cosecha al año, (la región de Oriente sólo ha dado esta cosecha últimamente, con 2,275 caballerías ó 28,530 hectáreas cultivadas); algunas de estas explotaciones, repito, podrían tener forma cooperativa, con lo que no solo se lograría facilitar a los campesinos pobres que aún benefician su café con métodos antiguos, el realizar una labor más útil para ellos, sino que los alumnos de la granja al adquirir el conocimiento moderno de esta explotación, despertarían en sus conciencias una nueva fé en el poder que tienen las asociaciones, y arraigaría en ellos ese espíritu que es el que salva en todas partes al cultivador, y que nosotros no conocemos todavía en nuestras campiñas.

En la Provincia de Pinar del Río por gestiones plausibles del señor Secretario de Agricultura y del señor Subsecretario del mismo Departamento Dr. Lorenzo Arias, se ha fomentado una granja avícola, que bien pudiera ser el inicio de esta clase de escuelas entre nosotros, por más que en estos momentos no tiene tal carácter. No obstante esto, creo que no pasará tiempo, sin que se regule para la función escolar.

Pero, ¿deben estar desposeídas estas granjas de toda enseñanza teórica dentro del aula? ¿No será de gran utilidad para esos jóvenes capataces, conocer ciertas teorías de la contabilidad agrícola; adquirir ciertos conocimientos de economía rural; y del medio agrario en que se han de desenvolver; ciertas nociones de geometría agrícola, para la parcelación geométrica del suelo, cubicaciones, etc.?

Las granjas escuelas de especializaciones, sin programa de estudios propiamente dicho, son las que preconizó para la Argentina el eminente agrónomo Ricardo Huergo; pero si cierta enseñanza teórica les es ofrecida, como por ejemplo, lo que en el laboratorio corresponde enseñar para una explotación de lechería o cremería, poseyendo un sencillo gabinete de física, y las anteriores instrucciones a que antes me referí, me parece que la escuela en este caso se acerca más a la Escuela de Lechería de Rutli en Suiza y a otras.

Las escuelas teórico prácticas de agricultura generalizan estas enseñanzas. Hay en esta clase de escuelas dos tipos: La escuela de agricultura, cuya enseñanza es teórica, llegando a carecer de granja anexa. Sus enseñanzas son de cultura general, con gabinetes, laboratorios, museos y para ingresar en ellas, se exige haber trabajado durante uno o dos años en una explotación agrícola particular.

Estas escuelas no pueden sernos útiles en modo alguno por hoy, porque los trabajos prácticos que se realizan en las explotaciones privadas, no contribuirían a otra cosa que a arraigar vicios de rutinismo que debemos procurar desaparezcan entre nosotros y porque la sola enseñanza teórica crearía a mi juicio una tendencia contraria en esos alumnos, a derivar hacia las oficinas públicas en lugar de guiarlos al campo. Nuestras granjas escuelas responden al tipo de las de enseñanza teórico-práctica, con granja anexa.

Estas granjas escuelas fueron creadas en número de seis, durante el período que desempeñé en la Secretaría de Agricultura, la Dirección General de Agricultura, siendo Presidente de la República el general José Miguel Gómez.

Estas escuelas poseen un campo de cultivos de dos caballerías o 26.84 hectáreas, con excepción de la de Pinar del Río que posee 53.68 hectáreas. Son pues estas granjas del tipo de las escuelas europeas.

Estas granjas están dotadas de laboratorios, gabinetes, museos, ejemplares vivos de ganado de buenas razas, máquinas o mejor dicho instalaciones industriales para beneficio de café, cacao y arroz, pequeña fábrica para harina de maíz; aparatos para desfibrado del henequén y para desmotado del algodón, apiarios, instalación completa de avicultura, con crías de gallinas de distintas razas, y fábricas para mantequilla y quesos; repartiéndose estas instalaciones industriales, según las granjas y las conveniencias de cada Provincia.

En estas granjas como se observa, yo tuve la tendencia a desenvolver primordialmente entre la juventud campesina los conocimientos de varias industrias rurales, que nosotros o explotamos imperfectamente o no explotamos, y a estos efectos señalé

para cada granja, una o dos industrias, y procedí de esta guisa, porque la industria agrícola tiene mucha iniciativa virgen en Cuba, no obstante ofrecer aquellas resultados excelentes.

Por ejemplo, el cultivo del arroz tiene a su disposición muchos y buenos terrenos para prosperar; el arroz denominado criollo que cosechamos en Cuba es de un gusto muy agradable, sus rendimientos de cosechas son estimuladores y la calidad buena, no obstante los imperfectos métodos de beneficiarlo; y sin embargo nosotros importamos cantidades considerables de ese grano todos los años. El año de 1913 a 1914 importamos 284,901,850 libras de arroz de diferentes países.

Quise por tanto, y en cierto modo, establecer especializaciones dentro de cada granja, no obstante su plan de estudios, extenso; pero esto no fué logrado completamente, porque dos años de enseñanzas resultan escasos, y porque la denominación de asignaturas, despertó en el profesorado de ellas, la tendencia a hacer su enseñanza más inclinada al aula que al campo, donde solo practican durante dos horas al día con diversificación de cultivos y experimentaciones.

El plan de estudios de estas granjas escuelas, actualmente en vigor con su Reglamento lo publico a continuación; pero como otro plan reformativo propuesto por mí ha sido presentado a la Cámara por los señores Representantes Doctores Miguel Ángel Céspedes y Eduardo Beltrán, también lo publico con el fin de que se puedan establecer las debidas comparaciones entre los dos.

Pero antes quiero llamar la atención sobre el artículo 9 de la ley vigente, que ya empieza a dar sus frutos enriqueciendo con buenos libros nuestra literatura agrícola, y quiero a la vez expresar que por ley de 18 de noviembre de 1913, se introdujeron varias reformas al actual plan, entre las cuales figura la derogación del artículo 4 que señala el horario de las asignaturas, dejando en libertad a los profesores para establecerlo según las exigencias de cultivos o de prácticas industriales que en cada una se realice.

Esta derogación del horario, y la Circular pasada a raíz de la aprobación de esa reforma por el Honorable Secretario de Agricultura derogando entre otros, algunos artículos del Reglamento, han determinado una feliz inclinación al desenvolvimiento de las prácticas de cultivos en extensión mayor y de las industrias; pero este cambio será más visible cuando el proyecto de ley que me hace el honor de defender en la Cámara los Doctores Céspedes y Beltrán sea ley.

Véase ahora nuestra ley de granjas escuelas.

LEY DE GRANJAS-ESCUELAS.

General José Miguel Gómez, Presidente Constitucional de la República de Cuba, hago saber que el Congreso ha votado, y yo he sancionado, la siguiente ley:

ARTÍCULO 1. Se crearán seis granjas escuelas para la enseñanza de la agricultura práctica.

ART. 2. Dichas seis granjas escuelas se establecerán en las cercanías de la Capital o de otra población de cada Provincia.

ART. 3. Las granjas escuelas tendrán capacidad para 30 alumnos, ingresando en ellas quince cada año.

ART. 4. Los estudios de las granjas escuelas comprenderán las siguientes asignaturas, distribuidas en dos años.

Primer año.—Aritmética y dibujo, aplicados; Nociones de física y química, aplicados; Nociones de historia natural; Agricultura; Hidráulica agrícola; Prácticas agrícolas.

Segundo año.—Nociones de zootecnia (práctica); Fitotecnia (práctica); Nociones de minería; Industrias rurales y máquinas (prácticas); Análisis agrícolas (prácticos); Práctica de contabilidad; Prácticas agrícolas.

ART. 5. El año escolar durará ocho meses. Se dedicarán a examen, que tendrán lugar una sola vez al año, los 15 días siguientes a la terminación del curso escolar.

Habr  en cada a o natural tres meses y medio de vacaciones, que fijar n para un per odo continuo o per odos parciales cada granja escuela, seg n las necesidades de la ense anza agr cola y de los cultivos locales.

ART. 6. Las c tedras de cada granja escuela ser n cuatro y se proveer n por oposici n, en la cual podr n tomar parte todos los ciudadanos cubanos que lo soliciten.

ART. 7. El Tribunal de oposici n se compondr  de cinco miembros:

(a) Un profesor de la Escuela de Ciencias de la Universidad, designado por el claustro de la misma.

(b) Un profesor de la Escuela de Ingenieros y Arquitectos, tambi n designado por el claustro de la misma.

(c) Un miembro de la Academia de Ciencias designado por la misma.

(d) Dos personas de reconocida competencia nombradas, respectivamente, por la Secretar a de Agricultura y la de Instrucci n P blica.

El tribunal se constituir  en la capital de cada Provincia a cuya escuela corresponda la c tedra que haya de proveerse.

ART. 8. La ense anza en las granjas escuelas agr colas ser  eminentemente pr ctica acomod ndose a las condiciones locales, teniendo por objeto principal difundir entre los labradores los conocimientos y las pr cticas agr colas sancionadas por la experiencia.

ART. 9. Cada profesor est  obligado a presentar a la Secretar a de Agricultura, dentro de los cuatro a os siguientes a su toma de posesi n, un manual de cada una de las ense anzas que est n a su cargo, manuscrito o impreso. (Ya se han presentado nueve obras.)

En su defecto, cesar  en su cargo a la terminaci n de los cuatro a os.

ART. 10. Para ingresar como alumno en las granjas escuelas agr colas se requiere:

Primero. Ser mayor de catorce a os y ser cubano o haber nacido en Cuba.

Segundo. Tener buena constituci n f sica.

Tercero. Sufrir un examen de admisi n de escritura al dictado, geograf a de Cuba y breves nociones de aritm tica.

La mitad de los alumnos que ingresen en las granjas escuelas deber n ser hijos de campesinos.

ART. 11. Los alumnos ser n propuestos por los ayuntamientos, distribuy ndose entre  stos el total de los que correspondan a cada Provincia.

En la Provincia donde resulte un n mero impar de ayuntamientos, corresponder  al que mayor n mero de habitantes tenga, la designaci n del candidato excedente.

La manutenci n y la ense anza de los alumnos ser n gratuitas.

ART. 12. Durante los cursos se efectuar n excursiones escolares para los fines de la ense anza.

ART. 13. La doble p rdida de un curso anula el derecho a nueva matr cula.

ART. 14. Al terminar los estudios, y previo examen, si  ste fuese favorable, se expedir  a los alumnos de la granja escuela el t tulo de "Maestro en Cultivo."

ART. 15. El director de la Granja Escuela elevar  un informe cada a o a la Secretar a de Agricultura sobre la ense anza de la granja, y especialmente en relaci n con las excursiones escolares.

ART. 16. Las granjas escuelas est r n bajo la direcci n e inspecci n de la Secretar a de Agricultura.

ART. 17. La Secretar a de Agricultura proveer  a los gastos de viajes y permanencias de los miembros del tribunal, cada vez que haya de trasladarse a una de las capitales de Provincias donde se celebren los ejercicios correspondientes.

ART. 18. La administraci n de la Granja Escuela rendir  cuenta mensual circunstanciada a la Zona Fiscal de su respectiva Provincia, de los ingresos que obtuviese por la venta de los productos elaborados y cosechados en la escuela.

ART. 19. Para la creaci n de las referidas granjas escuelas, adquisici n de tierras, ejemplares, aparatos y edificaciones, se concede un cr dito por una sola vez de 270,000 pesos para las seis granjas escuelas, y cuya distribuci n, por cada una, es la siguiente:

Sueldo del inspector encargado de la construcción de los edificios; adquisición de tierras en la vecindad de la Capital de provincia o población, según pudiera convenir; establos; edificios de lechería y cremería; aprieco y gallinero; apiario y su material; cochiguera; un salón y aparatos desfibradores; un salón y aparatos para fabricar harinas; una fosa de abonos; aperos de labranza; yuntas de bueyes; dos parejas de mulos; cuatro vacas criollas; aparatos para Física, Química y Meteorología; aparatos para lechería y cremería; ejemplares de plantas y semillas; taller de carpintería; una prensa para heno y motor; imprevistos; construcción de edificios para Dirección y oficinas, gabinetes, observatorio, laboratorio, dormitorios, baños, graneros etc. (Estos créditos fueron ampliados, para edificios, adquisición de ganado de raza y otros materiales.)

ART. 20. Se concede otro crédito de 112,680 pesos para gastos del personal facultativo y administrativo, manutención de alumnos y material de las seis granjas escuelas, según los detalles que a continuación se expresan, y cuya cantidad se consignará en los presupuestos anuales de la Nación, sin que puedan invertirse los créditos para personal técnico y administrativo, mientras no estén terminados los edificios e instalaciones definitivamente las seis granjas escuelas.

PRESUPUESTO ANUAL DE UNA GRANJA ESCUELA.

Personal y material.

1 director (catedrático).....	\$2, 000
1 secretario (catedrático).....	1, 800
1 contador (catedrático).....	1, 800
1 catedrático.....	1, 500
1 maestro carpintero.....	800
1 escribiente.....	600
1 mecanógrafo.....	600
1 bedel.....	500
1 mozo de aseo.....	300
2 peones.....	960
1 jardinero.....	480
1 sereno.....	300
1 capataz de campo.....	480
1 cocinero.....	360
2 auxiliares de cocina y servicios.....	480
Alimentación de treinta alumnos a cuarenta centavos diarios....	4, 320
Material de enseñanza y de oficina.....	1, 500
Total.....	18, 780

Importan las seis granjas escuelas, personal y material, 112,680 pesos.

ART. 21. Esta ley comenzará a regir desde su publicación en la Gaceta.

Por tanto, mando que se cumpla y ejecute la presente ley en todas sus partes.

Dado en Cayo Cristo, Isabela de Sagua, a diez y ocho de julio de mil novecientos nueve.

(Firmado) José M. GÓMEZ.

(Firmado.)

ORTELIO FOYO,

Secretario de Agricultura, Comercio y Trabajo.

En la Ley de 18 de noviembre se consigna un puesto de mecánico para cada granja, que con el carpintero ofrece las lecciones prácticas de reparaciones. Además se aumenta el peonaje y edificios.

SECRETARÍA DE AGRICULTURA, COMERCIO Y TRABAJO.

En uso de las facultades de que estoy investido por el artículo 68 de la Constitución, y en cumplimiento de la ley de 18 de Julio de 1909 creando las granjas agrícolas que han de establecerse en las seis Provincias de la República, vengo a dictar el siguiente Reglamento aplicable a dicha ley, a saber:

REGLAMENTO.

TÍTULO 1.—*De las oposiciones.*

ART. 1. Las granjas-escuelas agrícolas estarán bajo la jurisdicción de la Secretaría de Agricultura, Comercio y Trabajo, correspondiendo a ésta cuanto se relacione con la celebración de oposiciones, formación de tribunales para las mismas (según dispone la ley), admisión de los alumnos, formación de expedientes de profesores, administración, mejora y estado económico de las granjas y cuanto más sea necesario para su dirección e inspección.

ART. 2. Para la designación del tribunal de oposiciones, el Secretario de Agricultura, Comercio y Trabajo solicitará del Rector de la Universidad, del Presidente de la Academia de Ciencias y del Secretario de Instrucción Pública, que, según lo dispuesto en el artículo 7 de la ley, designe cada uno de ellos el miembro o los miembros que han de formar parte de dicho tribunal haciendo, al mismo tiempo, el nombramiento del miembro que a la Secretaría de Agricultura corresponde nombrar.

ART. 3. Una vez nombrado el tribunal se constituirá éste totalmente en la ciudad de la Habana y procederá, para los fines de la oposición, a formar la lista de temas de cada asignatura; a estudiar los expedientes de los aspirantes; a señalar el orden que para estos actos corresponde a cada Provincia; a notificar a los señores candidatos el sitio y hora en que se ha de celebrar el acto; y a notificar y a resolver todo cuanto más corresponde a la función que se le encomienda, dando cuenta, por medio de acta, al Secretario de Agricultura, Comercio y Trabajo.

ART. 4. Presidirá el Tribunal el miembro designado por la universidad cuya escuela de la misma institución docente tenga mayor similitud con las granjas, y será Secretario el más joven de los cuatro miembros restantes.

ART. 5. La citación para las oposiciones se hará por medio de la Gaceta Oficial con un plazo de treinta días de antelación para recibir las solicitudes de los aspirantes. Estas deberán ser dirigidas a la Secretaría de Agricultura, Comercio y Trabajo (la cual las pondrá en su oportunidad a disposición del tribunal) acompañadas de todos los demás antecedentes que interesen al candidato, tales como títulos, si los poseen, obras impresas, o manuscritos, certificaciones de trabajos prestados a la agricultura y a la enseñanza, etc. Estos elementos deberán ser tomados por el tribunal como principales puntos de partida para la apreciación de la aptitud de cada candidato.

ART. 6. Transcurridos los 30 días que se mencionan en el artículo anterior, el tribunal podrá empezar a funcionar dentro de los otros 30 días siguientes.

Los ejercicios serán públicos, se anunciarán en la Gaceta Oficial, correspondiendo al tribunal la designación del local que estime más conveniente entre los que el Estado disponga en cada capital de Provincia, publicando en la misma Gaceta el orden en que han de celebrarse, por Provincias, las oposiciones.

Elegidos los locales, el presidente del tribunal lo notificará a los jefes, o directores, de quienes dependan, para que pongan a disposición de aquel todo lo necesario a los fines de la celebración de dichos actos.

ART. 7. Se consignará una cantidad en los presupuestos de la Secretaría de Agricultura, Comercio y Trabajo, para los gastos que el funcionamiento de este tribunal ocasione.

ART. 8. Una vez constituido el tribunal podrá funcionar aunque faltare uno de los miembros, debiendo justificarse la ausencia y ser ésta sin continuidad. El miembro

ausente carecerá de voz y voto en aquellos actos en que la ausencia fuere total, y solamente tendrá voz en los actos en que la ausencia fuere parcial. En estos casos el Presidente usará el voto de calidad.

ART. 9. Los aspirantes entregarán al tribunal, previa invitación de éste, un cuestionario escrito conteniendo las materias que cada cual crea pertinente incluir en las asignaturas del grupo a que se oponga, y además, el plan pedagógico que se debe aplicar a dichas asignaturas para su mejor aplicación a la enseñanza agrícola. Con vista de este trabajo se hará la primera calificación de aptitud.

El orden de llamada de los aspirantes para los actos se hará por las fechas de presentación de las solicitudes. Si hubiese dos de igual fecha, el solicitante de mayor edad será el primero, y si las edades fueren iguales, se elegirá a la suerte. La lista de orden se publicará en los diarios de la localidad donde se celebran las oposiciones.

ART. 10. Las convocatorias, además de publicarse en la Gaceta, se harán por medio de oficios dirigidos a cada uno de los candidatos, señalándoles el día y hora en que deben concurrir para los efectos del artículo 9.

ART. 11. El primer ejercicio consistirá en discutir el aspirante con cada uno de los señores miembros del tribunal el cuestionario presentado con anterioridad. Terminada esta prueba, el tribunal, en sesión secreta, aprobará, o desaprobará, el ejercicio del candidato, notificándolo así al interesado por medio de una boleta impresa. Se seguirá idéntico procedimiento para los ejercicios sucesivos.

ART. 12. Pasados dos días (48 horas) de celebrado el primer ejercicio, los aspirantes que fueren aprobados pasarán al segundo ejercicio que consistirá en sacar de una urna doce temas a la suerte, desarrollando en 45 minutos, una oración que abarcará todas las materias contenidas en los temas, algunas de ellas, o una de ellas, según el deseo del candidato. Caso de que no tratase todos los temas, volverán a la urna los no tratados.

Los aspirantes que hubiesen profesado cátedras obtenidas por oposición en centros docentes superiores, podrán reducir el tiempo de su ejercicio oral a media hora en lugar de 45 minutos.

ART. 13. Previa nueva citación del tribunal, los aspirantes que fueren aprobados pasarán al tercer ejercicio, que consistirá en el desarrollo de un tema práctico, igual para todos, que deberá celebrarse con las reservas necesarias para cada uno de los aspirantes, si simultáneamente, y por falta de aparatos, no lo pudiesen realizar todos a la vez.

ART. 14. Realizados y calificados los ejercicios, y examinadas las obras y demás antecedentes de cada candidato, el tribunal formará una lista de los declarados aptos, correspondiendo el derecho a la cátedra como titular, al primero de la lista.

ART. 15. Las actas de cada ejercicio serán firmadas por el Presidente y el Secretario, y las de candidatos aprobados por todos los miembros.

ART. 16. Ninguna cátedra que quedare vacante podrá permanecer sin proveerse en propiedad más de tres meses. Durante este plazo, e inmediatamente que ocurra la vacante, se nombrará un profesor interino con el haber que al cargo corresponda. Si la vacante fuere de la cátedra que desempeña el director, el profesor que la sustituya con carácter de interino no asumirá la dirección, desempeñando ésta otro profesor que nombrará el Secretario de Agricultura, Comercio y Trabajo, hasta tanto no se cubra definitivamente el cargo.

CAPÍTULO II.—*De la enseñanza en general.*

ART. 17. Las asignaturas a cuya prueba de suficiencia deben someterse los candidatos para optar a cátedras en las granjas, y asimismo los alumnos para obtener el título de "Agricultor," son las siguientes, divididas en cuatro grupos, a saber:

Grupo "A."—Agricultura, primer año; análisis agrícola, segundo año; prácticas agrícolas, segundo año.

Grupo "B."—Aritmética y dibujo, primer año; práctica en contabilidad, segundo año; industrias rurales y máquinas, segundo año.

Grupo "C."—Nociones de historia natural, primer año; fitotecnia, segundo año; zootecnia, segundo año.

Grupo "D."—Nociones de física y química, primer año; hidráulica agrícola primer año; Nociones de minería, segundo año.

ART. 18. La enseñanza de estas asignaturas deberá tener para los alumnos un carácter elemental y eminentemente práctico y de aplicación.

El profesor de agricultura procurará extenderse con los alumnos en trabajos sobre el conocimiento de la tierra desde los puntos de vista de la agrología y de la mecánica agrícola, debiendo explicar nociones de economía y legislación rural.

En fitotecnia procurará referirse exclusivamente a los cultivos del país, de la localidad, y de aquellos que se adapten al clima y a la economía nacional. Igual criterio deberá sustentarse en lo que a zootecnia se refiere, realizando las prácticas correspondientes a todas esas materias.

En aritmética y dibujo aplicados debe exponerse todo lo que a la materia concierne, haciendo ejemplos de aplicación sobre cosechas, forrajes, abonos, labores, áreas, cubicaciones, y cuanto más pueda servir de preparación a las prácticas de contabilidad que en el segundo año se le exige. El dibujo de planos de predios, campos de siembra, demarcaciones de minas, etc., será consecuente con las asignaturas del Grupo "D," dentro del cual, además, se expondrán nociones de agromensura y nivelación de geología agrícola y mineralogía, pudiendo transportarse los casos estudiados al dibujo. La contabilidad agrícola se llevará por los alumnos con ejemplares tomados de los libros oficiales de la granja. La hidráulica agrícola estudiará sistemas de riegos, drenajes, y saneamiento con sus prácticas. La física y la química, dentro del carácter elemental de esta enseñanza deberán referirse a todo aquello que de más utilidad agrícola pueda resultar, realizándose al efecto análisis prácticos de las tierras.

Las industrias agrícolas han de tener carácter de aplicación, con nociones de construcciones rurales. Durante el curso se emplearán los aparatos, o enseres, de que cada granja disponga. En las enseñanzas, relativas a construcciones agrícolas y reparaciones, deberá el profesor, auxiliado del maestro carpintero o el mecánico, llevar a cabo con los alumnos los trabajos manuales de aplicación en las reparaciones de aparatos, piezas y construcciones en general. En las industrias, como en los cultivos, deberá darse preferencia a aquellos que se consideren más propicios a su desarrollo en la Provincia donde radique la granja.

ART. 19. Las prácticas de campo que sean motivos de la enseñanza, salvo inconveniencias de esa misma enseñanza en determinados casos y estudios, se realizarán en las primeras horas de la mañana, debiendo durar dos horas diarias para las diversas faenas agrícolas. Las otras prácticas durarán el tiempo que cada profesor estime conveniente, sin perjuicio del horario que los señores profesores convengan, poniéndose de acuerdo a ese fin.

ART. 20. No obstante lo expuesto en el artículo anterior, las horas de clase señaladas se entenderán de cátedra con aplicación; pero para la marcha industrial o agrícola, motivo de la aplicación, el profesor debe emplear el número de horas necesarias con el fin de terminar la labor racional del día, repartiendo estas labores de la manera más conveniente en los varios días que dure el ensayo, estudio, o experiencia que se realice.

ART. 21. Los señores profesores deberán asistir a sus clases puntualmente, pudiendo el director conceder hasta cinco días de licencia, designando al sustituto. Cualquiera otra licencia, deberá solicitarse de la Secretaría de Agricultura, Comercio y Trabajo, por conducto del director, extendiéndose aquella con arreglo a las disposiciones que en esta materia rigen.

ART. 22. Para los demás fines de la enseñanza, orden y disciplina, las granjas se regirán por su reglamento interior, que será sometido a la superior aprobación del Secretario de Agricultura, Comercio y Trabajo, previo informe de la Dirección de Agricultura.

Este reglamento será redactado por los directores de las granjas a los fines de la mayor uniformidad entre las mismas, salvo los casos de interés particular de cada granja.

ART. 23. En las horas que no sean de clase, o práctica, de excursiones o de estudios en el salón, los alumnos vacantes se dedicarán a las atenciones del campo, o de la granja en general, bajo la custodia del capataz de la misma, o del maestro carpintero si la labor encomendada se refiriese a reparaciones o construcciones. El director ejercerá en éste, como en todos los demás casos, la supervisión de toda la granja.

ART. 24. No se podrán extender simultáneamente matrículas de primero y segundo años.

ART. 25. Para los mejores fines de la enseñanza práctica las excursiones escolares a diversas fincas vecinas serán obligatorias.

Asimismo la dirección mostrará a los visitantes todos los ensayos agrícolas e industriales, y los diversos trabajos que en la granja se realicen.

ART. 26. Los maestros carpintero y mecánico a las órdenes del profesor correspondiente y de acuerdo con el artículo 18 de esta reglamento, darán prácticas en lo que se refiere a manejo de herramientas, reparaciones de aparatos, o enseres de la granja, construcciones, o departamentos y construcciones, en grande, o en pequeños modelos, según se les ordene. Atenderán a las reparaciones de los edificios.

ART. 27. El director tendrá su vivienda en la granja y asume el carácter de jefe y administrador de las explotaciones que en ella se realicen. Tendrá también a su cargo la distribución del personal para las faenas del campo de acuerdo con las necesidades de la enseñanza y el servicio correspondiente que deban prestar con los demás señores profesores. Tendrá en lo que afecta a su carácter de director y administrador, la co-responsabilidad en las compras y ventas que se realicen, según se especifica en el artículo siguiente, y la responsabilidad como depositario en la zona fiscal de los ingresos que se obtuvieran, quedando todo lo que a la función y vida de la granja comprenda, bajo su alta inspección. Los demás señores profesores si así lo desearan, podrán vivir en la granja, cuando para ello hubiere habitaciones disponibles y la distancia de ese establecimiento a la ciudad lo exigiese.

ART. 28. Estando las granjas escuelas de agricultura, según dispone el artículo 16 de la ley de 18 de julio de 1909, bajo la dirección e inspección de la Secretaría de Agricultura, Comercio y Trabajo, se dispone que el contador de la granja, previo informe y comprobación hecha con los profesores de los grupos "A," "B," y "C," según a quien corresponda el producto que se deba vender, y con el visto bueno y alta inspección del director, elevará mensualmente a la Secretaría de Agricultura, Comercio y Trabajo, los siguientes antecedentes:

A. Un estado exacto de las áreas sembradas en los campos de las granjas, clase de cultivos, estado de la cosecha, próxima recolecta y valor estimativo de ella al llegar a su próximo período de venta.

B. Número de vacas en producción de leche, venta diaria de ésta, valor en venta por unidad de dicho líquido, transformación en mantequilla y queso que se hiciere, preparación de fibras, beneficio de café, arroz y otros granos, harinas elaboradas, abonos fabricados y todo otro producto que se derive de las industrias agrícolas.

C. Venta de huevos, aves, cerdos y otros animales, miel de abeja, y todo otro producto que se derive de la zootecnia, debiendo en todos los casos expresarse el número del contrato celebrado, personas adquirentes y cuantos más particulares sirvan para esclarecer cualquier movimiento de numerario realizado por las granjas.

ART. 29. De acuerdo con los artículos 84 y 85 del reglamento para el gobierno de las secretarías del despacho del poder ejecutivo, no se podrá realizar venta alguna de los

productos de las granjas, bien sea de una sola vez, o en venta por entrega periódica o parcial de dichos productos, sin darle previo aviso a la Secretaría de Agricultura, Comercio y Trabajo, y sin que se efectúen en pública subasta con el debido anticipo de publicación explicativa del producto, cantidad y calidad que se venda, en todos los periódicos de la localidad donde esté situada la granja, y en uno por cada población importante de la Provincia. En lo que a compras de alimentos y material se refiera, se atenderán a lo dispuesto en las leyes y reglamentos vigentes.

ART. 30. No debiendo considerarse las granjas escuelas como centros de explotación agrícola, y sí sólo como centros de enseñanza, queda prohibida la extensión de los cultivos en general, y del tabaco y de la caña en una área mayor que las que reclamen las necesidades de la enseñanza a los alumnos, dando cuenta de ello según dispone el artículo 27 de este reglamento, a la Secretaría de Agricultura, Comercio y Trabajo.

(Este párrafo y el siguiente fueron derogados por la Circular del Secretario de Agricultura, a que se hizo antes referencia.)

En los casos en que por razón de capacidad de la maquinaria agrícola industrial o para la alimentación de los alumnos hubiere necesidad de hacer un cultivo de área más extensa, para que la función de la enseñanza industrial se realice cumplidamente, se hará esta con la autorización del Hon. Secretario del Ramo, y previo informe del Director de Agricultura.

Queda asimismo prohibida la venta de forrajes, la estancia de animales a piso, no debiendo exceder la extensión de estos cultivos, de aquella área, que reclame la alimentación de los animales de la granja.

Queda asimismo prohibido el fomento de crías de animales de pelea. Las ventas de huevos, aves y otros animales jóvenes realizadas a campesinos, con la intención de adquirirlos para mejorar sus crías podrán realizarse sin previo aviso; pero dando después cuenta a la Secretaría del Ramo, y conservando comprobante talonario especificador de la venta realizada en la contaduría con el visto bueno del director.

También se dará cuenta de las muertes que ocurran, entre los animales mayores de la granja.

El servicio de pasteurización de la leche y el de la monta de animales será gratis, llevándose el registro correspondiente, de estos y entregando para el caso de las montas comprobante talonario al interesado con los fines de garantía y crédito de la cría que obtuviere.

El servicio de beneficio de granos, o inmunización de estos para el gorgojo y otros parásitos, en aparatos secadores de calefacción, se prestará mediante la entrega de una cantidad que no exceda del costo de combustible empleado y manipulación.

El reparto de semillas de los productos de las granjas también será gratis, y también lo serán los análisis de tierras y abonos.

No podrá venderse ningún animal que esté en condiciones de ser reproductor, a no ser en caso de inutilidad, y dando para ello previo aviso a la Secretaría del Ramo. Cuando el número de estos reproductores excediese de lo conveniente, se atenderán para su venta a lo dispuesto en el artículo 29.

ART. 31. Ningún operario ni alumno prestarán servicio a heredad vecina, con la intención de auxilio en provecho del cosechero vecino. Sólo en casos de excursiones y con motivo de enseñanzas prácticas, podrán los alumnos prestar trabajo de índole agrícola a otro predio; pero sin exceder de un tiempo justo y que la instrucción reclame, realizándose siempre dichos trabajos a presencia del profesor correspondiente.

Tampoco podrán prestarse aperos, animales, servicio de aguas ni auxilio alguno que no sea por causa de contratiempo ajeno a la voluntad del vecino. Sólo en caso de establecerse una servidumbre sobre heredad inmediata, podrá autorizarse el servicio de agua por la Secretaría de Agricultura, Comercio y Trabajo.

ART. 32. En el informe anual que el director dará a la Secretaría de Agricultura, Comercio y Trabajo, según dispone el artículo 15 de la ley, deberá consignarse el balance económico de la granja, además de lo que se refiere a la enseñanza a la asistencia de profesores y alumnos, a los grados de adelanto, experiencias realizadas y ampliación de locales, o implantación de nuevas industrias agrícolas.

El balance económico abarcará: cantidades ingresadas en la Zona Fiscal durante el año por distintos conceptos, especificando las ventas y las cantidades de productos, vendidos, valor estimado de productos en almacén, o en próxima cosecha, y todo otro antecedente que afecte al estado económico de la Granja en ese sentido.

ART. 33. El bedel estará a las órdenes del director y obediente a las disposiciones de los señores profesores para la conservación de la disciplina entre los alumnos, y cumplirá fielmente los deberes que en el Reglamento interior se le asignen.

ART. 34. Los tribunales de prueba de curso lo formarán tres profesores, y los de grados los cuatro, teniendo el director en los casos de empate doble voto.

ART. 35. Los exámenes de prueba de curso consistirán en un interrogatorio al alumno con su correspondiente práctica si la materia tratada así lo exigiese, y un tema escrito.

Para los efectos de la clasificación de los actos de prueba de curso y de grado, se aplicarán las notas de sobresaliente, aprobado y suspenso, debiendo sustituirse esta última por la de reprobado en los exámenes que para nueva prueba de aptitud se realizaren en fecha señalada por el Reglamento interior de la granja; pero sin que entre uno y otro acto pueda mediar un espacio de tiempo menor de tres meses. De igual manera se procederá para los exámenes de grado.

ART. 36. El ejercicio de grado consistirá en el desarrollo de un proyecto agrícola que habrá de sostener el graduado ante el tribunal, y pudiendo disponer, para realizar dicho trabajo, de un plazo no mayor de tres meses. Los temas propuestos no pasarán en modo alguno de los conocimientos ofrecidos en la granja. Al final de este ejercicio se le hará realizar un trabajo práctico, o de aplicación, bien sea de agricultura, o de industria agrícola en la granja, o en un sitio adecuado y cercano, si se obtiene el correspondiente permiso.

ART. 37. Los títulos expedidos serán firmados por el Secretario de Agricultura, Comercio y Trabajo, el Director de la Granja y el Secretario de la misma, y registrados e inscriptos en los libros que al efecto se lleven en el negociado de agricultura y granjas, y en la Secretaría de la granja.

ART. 38. Se consignará en los presupuestos de la Secretaría una cantidad anual para reparto de premios, debiendo estos consistir en ejemplares de obras sobre materia agrícola, o de industria rural. Además, entre los alumnos sobresalientes del segundo curso, se sorteará anualmente en el acto de la apertura y reparto de premios, un aparato agrícola o industrial, o un ejemplar de animal de raza útil y perfeccionada. El transporte se pagará con cargo al presupuesto de la granja.

ART. 39. La presentación de las obras que exige el artículo 9 de la ley, se hará en un plazo de tres meses anteriores a la fecha del cumplimiento de los cuatro años, para que la Secretaría pueda, mediante el nombramiento de tres peritos, examinar la obra presentada, la cual, si a juicio del tribunal no estuviera a la altura de la competencia y adelanto que debe suponerse en un profesor, será declarada nula y vacante el puesto del profesor; y si se estimare útil, pero no publicable así se consignará; y si se conceptuare útil y publicable, el secretario, tomándolo del crédito de publicaciones que tenga la secretaría, procederá a imprimirla a la mayor brevedad, declarándose la obra propiedad del Estado.

ART. 40. Contra el fallo de ese Tribunal podrá alzarse el profesor dentro del plazo de 15 días de notificado, en cuyo caso el Ejecutivo nombrará tres peritos, para realizar un nuevo estudio, cuyo fallo será definitivo.

ART. 41. Los cursos se abrirán solemnemente por la autoridad superior de la Provincia, o su delegado, el día que cada granja hubiere elegido para iniciar su año escolar,

debiendo en el acto de la apertura leerse un trabajo adecuado del director, o profesor que éste designara en turno riguroso por cursos. Se leerá asimismo por el Secretario una memoria explicativa de las enseñanzas, trabajos y memorias realizados en el año y se expondrá, en síntesis, el balance económico de la Granja, tomando el informe elevado por el director al Secretario de Agricultura, Comercio y Trabajo, según dispone el artículo 15 de la ley 28 de este Reglamento.

ART. 42. El director de la granja será nombrado por el Honorable Señor Presidente de la República a propuesta del Secretario de Agricultura, Comercio y Trabajo.

ART. 43. Asumirá la Dirección del Departamento de Contabilidad de la Granja el profesor que fuere designado por los demás profesores.

ART. 44. La función de Secretario de la granja la asumirá cualquiera de los dos señores profesores no comprendidos en los artículos 38 y 39, siendo designado por los demás profesores. Será éste el encargado del material.

ART. 45. Queda facultado el Secretario de Agricultura, Comercio y Trabajo para suplir las deficiencias que pudieran presentarse en el servicio del personal subalterno de las granjas, pero no lo hará, salvo casos urgentes, hasta tanto no esté vigente el presupuesto en donde se hiciere la consignación correspondiente.

TÍTULO III.—*De los alumnos.*

ART. 46. Los alumnos se levantarán en invierno a las 6 a. m. y en el verano a las 5.30, debiendo recogerse a las 9 p. m., hora en que quedarán bajo la custodia del sereno.

ART. 47. Los alumnos vestirán uniformados con traje de dril crudo y blusa de la misma clase, con gorra de igual color y un galón verde en ella.

ART. 48. La Secretaría de Agricultura designará un médico y un dentista de la localidad vecina a cada granja para asistir a los alumnos enfermos, mediante la asignación correspondiente que se fijará en las presupuestos.

Este facultativo girará, cuando menos, una visita semanal a la granja, y cuantas veces sea necesario, en caso de enfermedades.

ART. 49. Para las admisiones sucesivas y después de hecha la primera entrada de alumnos en los dos cursos, los directores de las granjas se dirigirán al Secretario de Agricultura, Comercio y Trabajo, dando cuenta de las vacantes que existan y de los ayuntamientos a que correspondan aquellas, para notificárselo a los respectivos municipios por medio del Gobernador Provincial, y a fin de que elijan el o los alumnos que correspondan, dado que debe seguirse siempre una relación equitativa para que no resulten preferencias de un Ayuntamiento sobre otro.

En la admisión de los primeros quince alumnos del primer año se tendrá en cuenta para su elección la densidad de población del término municipal. Para los otros quince del siguiente año, se elegirán de los ayuntamientos que no hubieren enviado alumnos aún, o que menos alumnos hubiesen enviado, y, si sobrasen plazas, entonces se adjudicarán siguiendo el criterio de este artículo, siempre dentro de la mayor equidad.

ART. 50. Para el mejor cumplimiento del párrafo tercero del artículo 10 de la ley se sortearán en la Secretaría de Agricultura los quince primeros alumnos de entrada, en 7 y 8 a fin de ver cual de estas dos cifras corresponde a hijos de campesinos o no. En las vacantes siguientes se tendrá en cuenta para indicarle al ayuntamiento respectivo si debe ser o no hijo de campesino el que ha de ingresar.

ART. 51. Debe entenderse por hijo de campesino al hijo de agricultor, cultivador directo de su tierra, o que su explotación agrícola sea en propiedad, en arriendo, o aparcería; y por no campesino el de aquel que habitualmente reside en las poblaciones y vive de asuntos ajenos a la tierra.

ART. 52. Para el ingreso deberán sufrir un examen de nociones de gramática, dictado, aritmética hasta los quebrados y decimales y nociones de geografía. Acompañarán

asimismo certificados de edad, nacimiento y de estado de salud; también acompañarán certificado de conducta y aplicación, éste último expedido por el profesor del barrio correspondiente al lugar donde reside el alumno. Si el alumno proviniera de algún Instituto, la Secretaría correspondiente expedirá el certificado.

ART. 53. Previos estos requisitos se extenderá la matrícula.

ART. 54. La desaprobación de un alumno en dos cursos sucesivos será notificado al Secretario de Agricultura, Comercio y Trabajo, para que éste, a su vez, proceda, según dispone el artículo 45, a notificarlo al ayuntamiento por medio del gobernador de la Provincia, debiendo cubrir la plaza con otro alumno del mismo término. El Ayuntamiento que pasados dos meses de notificado no diere cuenta del alumno que envía, se entenderá que abandona el derecho que sobre esa vacante tiene, adquiriéndolo el ayuntamiento que le siga en el turno prefijado.

ART. 55. Los consejos de disciplina podrán extenderse en los casos graves hasta la pena de expulsión del alumno, la cual se notificará a todos los centros de enseñanza de la República para su conocimiento y efectos.

TRANSITORIOS.

ART. 56. Los demás casos que no estuvieren previstos en este Reglamento se resolverán por la Secretaría de Agricultura, Comercio y Trabajo, y lo que fuere de orden interior, a los efectos de la enseñanza, alumnos y trabajos, se atenderán a las resoluciones del director de la granja, quien dará cuenta a la superioridad para su aprobación.

ART. 57. Las granjas, en consideración y recuerdo de los que de algún modo deban conceptuarse como individuos que han dedicado su esfuerzo al progreso agrícola de Cuba, llevarán el nombre de uno de ellos para cada granja.

Dado en el palacio de la Presidencia, a 14 de julio de 1910.

(Firmado) José M. GÓMEZ,
Presidente.

(Firmado.)

F. DE P. MACHADO,

Secretario de Agricultura Comercio y Trabajo.

El plan a que antes me referí, es el siguiente:

Plan de estudios teórico prácticos.—Las asignaturas de que constará la profesión de Maestro en Cultivo serán:

Grupo "A": Máquinas agrícolas, suelo y labores (sobre el terreno); cultivos hortelano, de frutos, de prados, o industriales (sobre el terreno y de acuerdo con las exigencias de la localidad); industrias de origen vegetal (aplicadas); las industrias de origen vegetal comprenderán los beneficios de granos, desfibrado, desmotado, harinas, vinos, aceites, almidón y cualesquiera otra de su índole, especializando la enseñanza de acuerdo con las conveniencias de la localidad.

Grupo "B": Aritmética, y dibujo con geometría (aplicada); nociones de construcciones rurales (auxiliado por el maestro carpintero); economía y contabilidad agrícola.

En los cultivos de carácter económico que se especialicen el último año, encontrarán el profesor la fuente de la enseñanza de contabilidad agrícola.

La geometría aplicada comprende mensuras geométricas del suelo y cubitaciones.

Grupo "C": Zoología y Botánica agrícola (nociones en el gabinete y excursiones); cría y perfeccionamiento de los animales domésticos (en los establos, cochiqueras, etc., con estudios comparativos de los animales, para clasificarlo por regiones, y hacer las debidas valoraciones; industrias de origen animal (aplicadas).

Las industrias de origen animal, comprenderán la fabricación de quesos y mantequilla y pasteurización, apicultura, avicultura, salazones, y cualesquiera otra de su índole, especializándose la enseñanza de acuerdo con las conveniencias de la localidad.

Grupo "D": Elementos de física y química (en el gabinete y laboratorio con aplicación especial en el curso de física, a estudios de motores y máquinas); prácticas de

análisis y experiencias agrícolas (gabinete); meteorología agrícola (con las observaciones necesarias de climatología).

Estas asignaturas se estudiarán en los siguientes años:

Primer año: Aritmética, y dibujo con geometría aplicada; elementos de física y química; zoología y botánica agrícola; prácticas de carpintería y reparaciones (por los maestros carpintero y mecánico).

Segundo año: Meteorología agrícola; prácticas de análisis y experiencias agrícolas; nociones de construcciones rurales; cría y perfeccionamiento de los animales domésticos; prácticas de cultivos generales, simultáneas con las enseñanzas de máquinas agrícolas, suelo y labores.

Tercer año: Economía y contabilidad agrícola; desarrollo económico de una industria de origen animal; desarrollo económico de una industria de origen vegetal.

Las áreas de cultivo con carácter económico no podrán tener menos de cinco hectáreas.

Para las industrias animales, las granjas tendrán las aves o ganados, o colmenas necesarias para asumir el carácter de una explotación comercial.

Otros artículos de la ley vigente serán modificados ventajosamente, viéndose en este nuevo plan, la tendencia, a que los dos primeros años conformen al agricultor dentro de una cultura general teórica, dejando para el último año, las especializaciones en cada granja según las exigencias de cada una.

INSTRUCCIÓN SUPERIOR.

Si nos atenemos a la función atribuida a la carrera de ingeniero agrónomo en el apartado que se refiere al estudio de las categorías de la instrucción Pública, habrá que convenir que esta enseñanza abarca en el orden científico el más elevado concepto; porque no solo penetra con sus estudios de ciencia agrícola y económica, en el terreno de las aplicaciones a las grandes y complicadas explotaciones agro-industriales, sino que se interna dentro de la esfera de acción de las ciencias físicas, químicas y biológicas, para hacer del agrónomo en el sentido más alto un investigador, dentro de estaciones especiales de química-biológica, o de fito-patología o de otra clase, que contribuya a ensanchar con su labor científica el área de los conocimientos aplicados a la agricultura.

Esto hace a la vez pensar en la extensión de materias en los programas, circunscriptos generalmente a cursos de cuatro años, que o bien debieran extenderse a cinco años, o bien debieran especializarse, o bien debieran suprimirseles, ciertas enseñanzas que se tocan con el agrimensur e ingeniero civil.

En algunos países, estas enseñanzas se dividen en dos categorías, dándole a unas el elevado espíritu que ordenan los estudios superiores de las ciencias en su más amplia acepción; y por tanto toman estas enseñanzas carácter universitario y facultativo, sin más campo que una pequeña parcela para estudios experimentales, mientras las otras que caen dentro de la jurisdicción de institutos superiores agronómicos independientes, mirando más al fin profesional utilitario, derivan sus enseñanzas hacia la formación del técnico-agrícola, en el campo de sus aplicaciones científicas y económicas.

Al verme compelido en el plan que propuse y que fué aprobado, por una de estas dos orientaciones definidas me he inclinado a la segunda como la más inmediatamente útil sin dejar de considerarlo susceptible de futuras variantes porque nunca obra alguna es perfecta.

He dicho susceptible de variantes, y mi primera idea al expresarme así ha sido la de aumentar para más adelante un año más de estudios: o en otros términos, extender éstos a cinco años en lugar de cuatro y hacer mayores especificaciones en los cursos de zootecnia y fitotecnia.

Como quiera que el plan vigente actual que ya abarca el curso que hemos empezado en el mes de octubre, queda derogado, por el que se acaba de aprobar, omito pu-

blicarlo, dando sólo la que será para nosotros "Ley de reorganización de la escuela de agronomía" desde el próximo curso de 1916 a 1917.

Esta reforma se imponía porque nuestro plan, ha tenido, o tiene aún durante este año, la tendencia de inclinarse a las ciencias matemáticas en toda su extensión con sus aplicaciones a la ingeniería propiamente dicha, olvidando materias esenciales para formar un amplio concepto de la ciencia agronómica.

Como se observará, mi plan recién aprobado, como el que en este curso expirará, han hecho una especialización necesaria de la enseñanza de la fabricación de azúcar y su química azucarera, cosa explicable por el medio en que esta escuela se desenvuelve.

Además de la instrucción superior agrícola en la Universidad, tenemos dos profesiones de la misma enseñanza; que vienen a representar dos instrucciones superiores de categoría secundaria; pero con carácter de especialización.

No diré hasta que punto estén bien incorporadas a la universidad estas dos profesiones; pero sí debo declarar la necesidad de su existencia particularmente la especialización de Perito químico azucarero, porque la falta de estos jefes de laboratorios en nuestros centrales, hacía que elementos extranjeros invadieran este campo de nuestras actividades profesionales, de tal manera que hace apenas diez años, sólo 8 o 10 químicos cubanos trabajábamos en nuestros centrales, aceptados generalmente como de inferior calidad, por la tendencia natural que hay en países como el mío, de creer de inferior calidad todo aquello que la intelectualidad nativa puede ofrecer como producto del propio país; y esta profesión así especializada nos ha permitido ir de modo lento, pero seguro, llevando a la convicción de todos, que los químicos azucareros cubanos no son ni con mucho, de inferior calidad a los químicos extranjeros, los cuales suelen venir a Cuba disfrutando de sueldos a veces fabulosos. Esta labor de penetración cubana en los ingenios cubanos, sigue fortificándose y ya hoy de los 180 ingenios mas o menos que poseemos 135 químicos son cubanos y 101 extranjeros, esperando no sin fundamento que antes de pocos años todos o casi todos serán cubanos.

El plan pues que regirá desde el próximo curso la enseñanza superior de la agricultura entre nosotros es el siguiente:

PROYECTO DE LEY APROBADO.

ARTÍCULO 1. La Escuela de Agronomía de la Facultad de Letras y Ciencias de la Universidad de la Habana, se denominará en lo sucesivo "Escuela de Ingenieros Agrónomos y Azucareros," continuará establecida en la quinta de "Los Molinos" y se ajustará al siguiente plan:

Escuela de ingenieros agrónomos y azucareros.

Los estudios propios de esta escuela, serán:

Cátedra "A." Física y química agrícolas, un curso; fabricación de azúcar de industrias derivadas, dos cursos.

Cátedra "B." Agrología, un curso; fitotecnia, un curso; zootecnia un curso.

Cátedra "C." Economía rural, un curso; administración rural y formación de proyectos, un curso y legislación rural un curso.

Cátedra "D." Industrias rurales, un curso; maquinaria agrícola, un curso; construcciones rurales, un curso.

Cátedra "E." Microbiología agrícola, un curso; patología vegetal, un curso.

La Escuela de Ingenieros Agrónomos y Azucareros, tendrá anexos: Un laboratorio químico para análisis agrícolas e industriales; un laboratorio y museo de agrología, fitotecnia y zootecnia; un laboratorio y museo de microbiología agrícola y patología vegetal; talleres de maquinaria azucarera, de destilería, de industrias rurales y de maquinaria agrícola; material meteorológico y de construcciones rurales; establos para los ejemplares zootécnicos necesarios; animales y aperos de labranza y un campo de experimentación.

Habr  un catedr tico auxiliar para las C tedras "A" y "D" y otro catedr tico auxiliar para las C tedras "B," "C," y "E," y los ayudantes necesarios. Los catedr ticos auxiliares ser n jefes de gabinetes, laboratorios, museos y trabajos pr cticos del grupo de asignaturas a que correspondan.

Para el ingreso en la Escuela de Ingenieros Agr nomos y Azucareros, se requieren los mismos requisitos establecidos para el ingreso en la Escuela de Ingenieros, Electricistas y Arquitectos.

La Facultad admitir  a los ejercicios para el grado de Ingeniero agr nomo y azucarero a los alumnos que hayan aprobado, todos los cursos de la escuela, y adem s, los estudios siguientes:

En la Escuela de Ciencias: An lisis matem tico ( lgebra superior), un curso; trigonometr a, un curso; f sica superior, dos cursos; qu mica inorg nica y anal tica, un curso; qu mica org nica, un curso; mineralog a, un curso; geolog a, un curso; biolog a, un curso; zoolog a general; un curso; zoograf a (entomolog a), un curso; bot nica general, un curso; fitograf a y herborizaci n, un curso.

En la Escuela de Pedagog a: Dibujo lineal, un curso.

En la Escuela de Ingenieros Electricistas y Arquitectos: Dibujo aplicado (topogr fico y de m quinas), un curso; agrimensura, un curso; topograf a, un curso; hidr ulica agr cola, un curso.

La Facultad, oyendo a la Escuela de Ingenieros Agr nomos y Azucareros, establecer  las incompatibilidades y precedencias de estos estudios y formar  la agrupaci n reglamentaria de los mismos, para los alumnos de la ense anza oficial.

Los ejercicios para el grado de Ingeniero agr nomo y azucarero consistir n en practicar tres an lisis (uno de un producto azucarero), otro de tierra o abono y otro de un producto de industria rural, y en la formaci n de un proyecto de explotaci n agr cola, con memoria, planos y presupuestos.

El rector, a propuesta del tribunal examinador, en representaci n de la Facultad, conceder  el t tulo de Ingeniero agr nomo y azucarero a los alumnos que hayan aprobado estos ejercicios.

La Facultad admitir  a los ejercicios para el grado de Perito agr nomo a los alumnos que hayan aprobado los siguientes cursos de la "Escuela de Ingenieros Agr nomos y Azucareros": F sica y qu mica agr colas, un curso; agronom a, un curso; fitotecnia, un curso; zootecnia, un curso; econom a rural, un curso; industrias rurales, un curso.

Y, adem s, los estudios siguientes:

En la "Escuela de Ciencias": F sica superior, dos cursos; qu mica inorg nica y anal tica, un curso; qu mica org nica, un curso; biolog a, un curso; zoolog a, un curso; bot nica general, un curso.

En la "Escuela de Pedagog a:" Dibujo lineal, un curso.

En la "Escuela de Ingenieros Electricistas y Arquitectos": Agrimensura, un curso.

Los ejercicios para el grado de perito agr nomo, consistir n en practicar dos an lisis (uno de tierra o abono y otro de un producto de industria rural), y en la resoluci n de un problema o de caso pr ctico.

El rector, a propuesta del tribunal examinador, en representaci n de la Facultad, conceder  el t tulo de Perito agr nomo a los alumnos que hayan aprobado estos ejercicios..

La facultad admitir  a los ejercicios para el grado de Perito qu mico y azucarero a los alumnos que hayan aprobado los siguientes cursos de la Escuela de Ingenieros Agr nomos y Azucareros: F sica y qu mica agr colas, un curso; fabricaci n de az car o industrias derivadas, dos cursos; Fitotecnia (cultivo de la ca a), un curso.

Y, adem s, los siguientes estudios:

En la "Escuela de Ciencias": F sica superior, dos cursos; qu mica inorg nica y anal tica, un curso; qu mica org nica, un curso; biolog a, un curso; bot nica general, un curso.

Los ejercicios para el grado de perito químico y azucarero, consistirán en practicar dos análisis (uno de un producto azucarero y otro de tierra o abono), y en la resolución de un problema o de un caso práctico.

El rector, a propuesta del tribunal examinador, en representación de la facultad, concederá el título de perito químico y azucarero a los alumnos que hayan aprobado estos ejercicios.

ART. 11. A los efectos de este plan:

1. La actual Cátedra "A" de la "Escuela de Ingenieros Agrónomos y Azucareros," constará de tres cursos: uno de Física y química Agrícolas y dos de Fabricación de Azúcar e industrias derivadas..

2. La Cátedra "B" subsistirá con los mismos cursos y denominaciones que existen en la actualidad, excepto el de agronomía, que se cambia por un curso de Agrología.

3. La Cátedra "C" constará de tres cursos, uno de economía rural, otro de administración rural y formación de proyectos y otro de Legislación rural.

4. Se crea la Cátedra "D" de la "Escuela de Ingenieros Agrónomos y Azucareros," que constará de tres cursos: uno de industrias rurales, otro de maquinaria agrícola y otro de construcciones rurales.

5. Se crea la Cátedra "E" de la misma escuela, que constará de dos cursos: uno de microbiología agrícola y otro de patología vegetal.

6. El actual cargo de catedrático auxiliar, Jefe de Laboratorio de la "Escuela de Agronomía," lo será de las Cátedras "A" y "D," y se crea otra plaza de catedrático auxiliar para las Cátedras "B," "C" y "E," que será conservador de los museos de la "Escuela de Ingenieros Agrónomos y Azucareros."

7. La mineralogía y la cristalografía, que forman actualmente un curso de la Cátedra "I" de la "Escuela de Ciencias," quedarán separadas en dos cursos distintos, de los cuales el de cristalografía sólo se exigirá para los doctorados en ciencias.

8. La topografía y la geodesia, que actualmente forman un curso de la Cátedra "B" de la "Escuela de Ingenieros, Electricistas y Arquitectos," quedarán separadas en dos cursos distintos, de los cuales, el de geodesia sólo será obligatorio para el doctorado en ciencias físico-matemáticas y para la carrera de Ingeniero civil.

9. Se agrega un curso de hidráulica agrícola a la Cátedra "D" de la "Escuela de Ingenieros, electricistas y arquitectos," para los aspirantes al título de Ingeniero agrónomo y azucarero.

10. Se crea una plaza de Catedrático auxiliar de la Cátedra "A" de la "Escuela de Ingenieros, Electricistas y Arquitectos," el cual será jefe del taller de dibujo aplicado.

11. Se crea una plaza de Catedrático auxiliar de la Cátedra "C" de la "Escuela de Pedagogía," el cual será jefe de los trabajos prácticos del taller de dibujo lineal y natural de dicha escuela.

12. El personal administrativo de la "Escuela de Ingenieros Agrónomos y Azucareros," consistirá en:

1 director, con la gratificación anual de.....	\$600
1 jefe de cultivos, con el haber anual de.....	1,500
1 mecánico, con el haber anual de.....	900
1 conserje, con el haber anual de.....	900
1 escribiente, con el haber anual de.....	600
1 jardinero, con el haber anual de.....	600
1 vigilante nocturno, con el haber anual de.....	540
1 carrero, con el haber anual de.....	540

Y los mozos, obreros y peones necesarios.

El cargo de director será desempeñado por uno de los profesores de la escuela, elegido por ellos mismos y por períodos de tres años.

ART. III. Para la provisión de cátedras correspondientes a la "Escuela de Ingenieros Agrónomos y Azucareros," se exigirá el título de Ingeniero agrónomo y azucarero o su equivalente según el artículo 9 de esta ley; y para la provisión de los

cargos correspondientes a la Cátedra "C" de la Escuela de Pedagogía," se exigirá el título de doctor en pedagogía.

En todo aquello que no esté preceptuado especialmente en esta ley, se observarán las demás disposiciones que rigen sobre provisión de Cátedras de la universidad.

ART. IV. Para la manutención de animales, entretenimiento de laboratorios, reparación de máquinas y aperos de labranza y adquisición de materia prima para las pequeñas industrias y para la fabricación de abonos químicos, se consignará la cantidad de \$2,400 anuales en los presupuestos de la nación.

ART. V. Para la adquisición de material de laboratorio y museos, maquinaria azucarera, de destilería, de industrias rurales, maquinaria agrícola, material meteorológico y de construcciones rurales, ejemplares zootécnicos, animales y aperos de labranza, se consignará en los presupuestos nacionales la suma de \$10,000 cada año, hasta tanto la "Escuela de Ingenieros Agrónomos y Azucareros," quede habilitada debidamente para la más eficaz enseñanza.

ART. VI. Corresponderá a los ingenieros agrónomos y azucareros, peritos agrónomos y peritos químicos y azucareros, el desempeño de las funciones de aquellos cargos del estado, la provincia o el municipio que, por su índole profesional, estén dentro de los conocimientos científicos que son propios, respectivamente de las citadas profesiones. Especialmente corresponderá a los ingenieros agrónomos y azucareros sustituir en sus funciones a los ingenieros de montes, cuando no hubiere de estos últimos el número suficiente para las necesidades del servicio público.

Los ingenieros civiles o ingenieros de minas que hubieren desempeñado funciones públicas como ingenieros de montes o de montes y minas, por un período no menor de cinco años, se considerarán habilitados, al igual que los ingenieros agrónomos y azucareros, para sustituir en sus funciones a los ingenieros de montes y a los ingenieros de montes y minas, cuando no hubiere número suficiente de estas dos últimas clases de profesionales para las necesidades del servicio público.

Los peritos agrícolas que hubieren desempeñado funciones públicas en el Departamento de Montes y Minas por un período de tiempo no menor de cinco años podrán también sustituir en sus funciones, interinamente, a los que desempeñen los cargos de ingenieros de montes o de montes y minas, cuando no hubiere número suficiente de estas dos últimas clases de profesionales para las necesidades del servicio público.

Les corresponderá, asimismo a los ingenieros agrónomos y azucareros, el derecho de deslindar, medir, radiar, circular, dividir y repartir hatos, corrales, realengos y cualesquiera otras propiedades rústicas ya sean privadas o ya del Estado, de la Provincia o el Municipio, de la extensión que fuesen, interviniendo en los estudios agronómicos de trabajos catastrales, cuando estos se hiciesen.

Les corresponderá también tasar fincas y propiedades rústicas, privadas o públicas, de cualquier extensión que fuesen, con sus cosechas e industrias derivadas de ellas, aparatos, aperos de labranza, ganado, etc., así como intervenir en los peritajes de servidumbres que, por cualquier servicio público o privado, fueren a establecerse, todo de acuerdo con el párrafo primero del artículo 614 de la ley de enjuiciamiento civil.

Lo dispuesto en los dos párrafos anteriores se entiende sin perjuicio de los derechos concedidos a los agrimensores y tasadores de tierras por el Artículo V de la orden del Gobierno Militar de Cuba, número 146 de 10 de mayo de 1902.

Los profesores, que según los apartados (a) y (b) del artículo 7 de la ley de 18 de julio de 1909, deben ser designados por el claustro de la Universidad Nacional para formar parte en los tribunales de oposición para la provisión de las cátedras que vacaren o se crearen en lo sucesivo, en las granjas escuelas agrícolas, deberán ser precisamente catedráticos de la "Escuela de Ingenieros Agrónomos y Azucareros."

Artículo VII. A los efectos del artículo anterior, la Secretaría de Agricultura Comercio y Trabajo abrirá un libro-registro de ingenieros agrónomos, ingenieros agrónomos y azucareros, peritos químico-agrónomos, peritos agrónomos y peritos químicos y azucareros, especificando la precedencia de estos títulos y su antigüedad, servicios prestados por los titulares y cuantos otros particulares se estimaren necesarios o

convenientes para la mejor selección del personal en las funciones y servicios que se les atribuyan.

Los peritos agrónomos podrán sustituir a los ingenieros agrónomos y azucareros, cuando no hubiere de estos últimos el número suficiente para las necesidades del servicio público.

ART. VIII. Las Cátedras "A," "B," y "C" de la "Escuela de Ingenieros Agrónomos y Azucareros," continuarán desempeñándolas los profesores que, respectivamente, las han venido desempeñando en la "Escuela de Agronomía."

ART. IX. A partir de la vigencia de esta ley, dejarán de expedirse los títulos de Ingeniero agrónomo y de Perito químico-agrónomo, pero deberán observarse las siguientes reglas:

Primera. El título de Ingeniero agrónomo, será equivalente al de ingeniero agrónomo y azucarero, que por esta ley se crea, para todos los efectos legales.

Segunda. El ingeniero agrónomo y azucarero, podrá ejercer como perito químico-agrónomo, como perito agrónomo y como perito químico y azucarero.

Tercera. El título de perito químico-agrónomo, será equivalente a los títulos de perito agrónomo y de perito químico y azucarero, que por esta ley se crean.

ART. X. El Poder Ejecutivo incluirá las cantidades necesarias para satisfacer los gastos a que dé lugar el cumplimiento de esta ley, en los próximos presupuestos de la Nación y en los sucesivos, y mientras esto no fuere posible, tomará las cantidades necesarias de cualesquiera fondos disponibles que hubiere en el Tesoro Nacional.

DISPOSICIÓN TRANSITORIA.

No obstante lo dispuesto en el Artículo III de esta ley, si a la primera convocatoria para proveer la Cátedra "D" fuera declarada desierta la oposición, quedará autorizado el Presidente de la República para contratar libremente, por tiempo ilimitado y sin sujeción a un sueldo determinado, los servicios de un profesor extranjero, especialista eminente en microbiología agrícola y patología vegetal, para que explique dicha cátedra.

II.—DISPOSICIÓN FINAL.

Quedan derogadas las leyes, órdenes, decretos y demás disposiciones anteriormente dictadas en cuanto se opongan al cumplimiento de la presente ley, que comenzará a regir desde el día de su promulgación en la Gaceta Oficial de la República.

Salón de Sesiones de la Comisión de Instrucción Pública de la Cámara de Representantes, a los ocho días del mes de Junio de mil novecientos catorce.

En realidad este plan, que abarca el desarrollo de los conocimientos agrícolas en general, estudiando sus tres grandes ramas de cultivos, zootecnia y de industrias agrícolas, es lo que podemos ofrecer hoy como aspiración para llenar nuestras necesidades; pero por la propia virtualidad de este plan, yo confío que hará romper cierto marasmo que se observa en la juventud de hoy, para derivar hacia esta profesión la más fecunda, porque es la que más favorece la riqueza nacional dado nuestro ambiente agrícola; y cuando la mayor corriente de energías jóvenes invadan nuestras aulas, habrá llegado la hora de agregar ese quinto año a que antes me referí, y especializar determinadas ramas de esta carrera, en su más elevado concepto científico.

En la actualidad nuestra Escuela de Agronomía está situada en la Quinta de los Molinos, antigua mansión señorial de veraneo de los Capitanes Generales de la colonia.

La Escuela carece de un edificio especial con distribuciones interiores para sus distintos departamentos de enseñanza, porque una multitud de bonitos pabellones, levantados entre preciosos jardines, campos de cultivo, fuentes, lagos, y bellas cataratas, prestan el servicio de aulas, gabinetes, laboratorios, etc., en las mejores condiciones. La Escuela dispondrá de un pequeño ingenio azucarero.

Nuestro gran edificio es la propia universidad, situada en las cumbres de una pequeña loma, que domina a toda la ciudad y en cuyas faldas está instalada la Escuela de Ingenieros agrónomos y azucareros.

LA INSTRUCCIÓN INTERMEDIARIA.

Por J. ALBERTO GÁMEZ,

Ex-Subsecretario de Fomento de Nicaragua.

Es de la mayor importancia, para los países de nuestro continente, si la consideramos desde el punto de vista de la función que debe llenar y no como simple colección de conocimientos preparatorios, para seguir los cursos de las grandes escuelas, la instrucción intermedia.

Responde, en efecto, en la historia de los pueblos, al fenómeno más o menos marcado de la formación de la cultura, el cual importa conocer bien, para dar a aquélla su expresión y carácter.

En Grecia, que es la nación que nuestra historia nos presenta mejor delineada, el fenómeno a que me refiero, puede seguirse con toda claridad. Cualquiera que hayan sido las causas del movimiento científico, está manifestado que no tomó su carácter propio sino en la época de los grandes filósofos, cuando una instrucción general y sintética se extiende vigorosamente, al sostenido impulso de la organización, que abarca todas las fuentes del pensamiento y dirige sus manifestaciones en las magníficas formas, que se denominan "Literatura y Bellas Artes."

Apenas hay en los conocimientos modernos cosa alguna en que el estado no haya encontrado fórmula suficiente para explicar y contener los hechos, sin que el análisis de las pocas obras que de aquel soberbio pueblo nos quedan, no la descubra en ellas con una precisión que aun no ha sido suficientemente apreciada en nuestros días. Pitágoras, en veinte líneas, nos da con pasmosa claridad, todas las leyes de la gravitación universal, explicadas por la teoría de las cuerdas sonoras; y no es para olvidar que a partir de él, se exigía para la enseñanza superior, guardada en secreto por solemne juramento, el estudio de la geometría, cuya gran extensión en ese entonces, no es tan conocida ahora como podía suponerse.

Sea de ello lo que fuere, importa en la exposición que hago, fijar el punto de que la civilización en Grecia corresponde a una expansión científica, en que se atienden todas las manifestaciones del pensar humano, con amplio material de estudio, que si bien organizado en diferentes formas sintéticas, guarda en el fondo una armonía, que satisface a todas las inteligencias y las pone en condiciones de llenar sus variadas tendencias, con explicaciones y desarrollos que de todo daba un profesorado modelo, desde la más sencilla de las artes hasta la más elevada de las ciencias.

Fuera de este período, cuyo brillo llega hasta nosotros, con el nombre de cultura Griega, no se nota en el resto de la historia, sino la opinión pública, que poco satisfecha de las escuelas, busca luz en los discursos de quien sabe impresionarla, en la doctrina de los partidos políticos y religiosos, en las historias de los viajeros, en las obras de propaganda científica, en la interpretación de sus grandes libros y en todo, en fin, cuanto es literatura propia y extranjera.

Estas dos manifestaciones de un mismo hecho, me parecen suficientes para formular la ley de que los pueblos, en el desarrollo de la vida, tienen un período en que espontáneamente buscan un sistema, más o menos filosófico, que les dé cuenta de sus impresiones y les sirva de norma en el mejoramiento continuo de su condición, y que, para satisfacer estos impulsos, apelan a todos los medios que están a su alcance, aun a riesgo de adquirir una instrucción viciosa y fatal a su existencia.

Estos conocimientos que se difunden, evolucionan y diferencian constantemente vienen a ser el patrimonio de cierta categoría de individuos, que da al país el sello particular que constituye su civilización y cultura.

En investigación de este mismo fenómeno, quiero seguir, a grandes trechos, cierto movimiento intelectual que se marca en todos nuestros pueblos, a partir del renacimiento.

Esto acaso me permitirá ser más preciso en las ideas que quiero externar, sobre el objeto, carácter y extensión que debe tener la enseñanza intermediaria, cualesquiera que, por otra parte, sean la instrucción primera y la enseñanza superior.

Desde principios de nuestra edad moderna, fómase, en efecto, un medio de cultura cada vez más amplio, que no se satisface con la sola escuela primaria, ni busca el gimnasio, ni se presenta ante el pórtico de la universidad: Almacena y clasifica sus propios conocimientos, ama la literatura y aprende en la vulgarización científica, en la propaganda de doctrinas y en los credos políticos: Hace filosofía propia, establece principios sociales a su manera y lleva por doquier su estandarte político. En América los tipos, que así se forman, son más activos, no creen en la enseñanza clásica, que importa poco a su labor, y obran siempre impulsivamente, originando resultantes inesperadas, que someten las sociedades a trepidaciones perturbatrices de la buena marcha que realmente tendrían, en pro del bien común, si las condiciones psicológicas fueran otras. Una prueba ligera de esto nos ofrecen el espiritismo y esa mezcla de creencias religiosas y tradiciones científicas de la India, que se bautiza con el nombre de teosofía, los cuales originan una corriente que invade todo y pasa sobre el positivismo escéptico o materia lista, que ayer nomás sentaba sus reales hasta en el mismo hogar, con perjuicio de las virtudes cívicas y la moralidad de la familia.

De nuestras escuelas clásicas se eliminó cuanto tenía carácter metafísico, fundados en que la experiencia era el único criterio real; pues bien esta filosofía desterrada nos amenaza de nuevo de manera avasalladora. Jóvenes de ambos sexos, que a duras penas estudiaban sus lecciones de colegio, son ahora teósofos de acabada instrucción. Toda la fraseología de que en otro tiempo se servía el maestro para dar a sus opiniones la forma de la verdad demostrada, vuelve a escucharse, si no ya desde la cátedra escolar, desde el puesto del presidente y del hermano orador, en numerosos templos al estilo masónico; y maravilla sobre manera notar que positivistas de ayer se pasan al nuevo campo con todo y bagajes, prometiéndose hacer cuanto les sea posible para llegar a oír la voz del silencio.

Todo esto, digámoslo de paso, es sintomático de un estado social decadente, producido por ese egotismo que siempre ha sido vida y sostén de la anarquía, que se traduce por trastornos y revoluciones internas y guerras en el exterior. Acaso la guerra actual de Europa es su grandiosa obra mundial y las desgracias de México y Nicaragua efectos de ondas distraídas, por causa de mínima resistencia en el medio. Hay que reconocer, queramos o no, que existe una instrucción poderosa, que no viene de las aulas y se adquiere a diario en todas partes, teniendo por alumnos desde el propio catedrático de la universidad hasta el vendedor de periódicos de las calles. Esta enseñanza es general y eminentemente filosófica. Entiende de análisis a maravilla, y, cuando no puede hacerlo, lo inventa, en tanto como lo necesita para sus fines. Sus principios son de aplicación efectiva, porque tienen el sabor de la pasión y de lo que place a los sentidos. Opina en todas las cosas y aun cuando habla de la experiencia y de los hechos, es de lo que menos se preocupa, llegado el caso de prueba, porque en su propio sujeto, encuentra motivos para obrar como mejor conviene a sus intereses de momento. Posee oratoria propia, dispone de la prensa, aplaude a los sabios riéndose, porque ella es práctica y conoce como son realmente las cosas y no como quieren los semilocos, que le hacen gracia y la divierten.

No me burlo ni exagero, apunto sencillamente un hecho que se presenta en la historia de la civilización, desde Grecia hasta nuestros días, con inequívoca claridad.

Como es evidente que los defectos de una organización social provienen de la extralimitación en uno o en otro sentido de funciones necesarias a su existencia, me parece de todo punto racional, para restablecer la armonía, regular aquella parte del organismo en que el defecto se manifiesta.

De nuestro estudio, resulta, de manera tangible, que la función desarmonizante pertenece a la instrucción y también que la deficiencia de ésta ha de buscarse en la época en que se desarrollan y acondicionan las facultades individuales, cuyos cri-

terios han de prepararse, para mantener la armonía cuando, en la esfera de su actividad particular, produce las pequeñas corrientes que, luego o al andar del tiempo, integran el movimiento total de la sociedad.

Ese período es el de la instrucción intermediaria.

En todo lo expuesto, me fundo para proponer el siguiente programa:

1. Reforma completa de la enseñanza científica general, para unificarla más, armonizarla y sintetizarla, hasta donde lo permita la ciencia actual.

2. Cada ramo será comprensivo de todos los conocimientos que le informan en su esfera total.

3. Dar a conocer como estudios históricos los sistemas filosóficos y ciencias tradicionales de la humanidad con toda la exactitud y claridad posible, sin intervención de criterio alguno para juzgar las doctrinas.

4. Una sólida instrucción literaria, paralela a la científica, con un idioma del grupo greco-latino y otro que sea el hebreo o el sánscrito, con sus dobles caracteres de ideográficos y fonéticos.

5. Terminar los estudios de carácter histórico, con los de las cábalas hebrea y sánscrita, en relación con la parte ideográfica de sus alfabetos e idiomas, como simbolismos destinados a exponer los conocimientos de aquellas épocas e investigar además esos mismos conocimientos, utilizando el idioma, sin permitir idea previa para menguarlos o desfigurarlos.

6. Completar los estudios de ciencia pura con aplicaciones a las artes o industrias, las cuales se propondrán como problemas a los alumnos, cuando ya posean los conocimientos suficientes, para que los resuelvan en forma de tesis, indicándoles, de antemano, la bibliografía del caso; y establecer un sistema de premios municipales, gubernamentales, o de cualquier institución social, a quienes presenten los mejores trabajos.

7. Dibujo, pintura, música y fundamentos de las otras bellas artes.

8. Ciencias político-sociales e idiomas modernos, que deben estudiarse, fuera del inglés y el castellano.

9. Gimnasia y deporte.

Este programa que, de pronto, parece demasiado extenso, aun aceptando la necesidad de la completa reforma, no tiene ese inconveniente, si se modifica la exposición de nuestros estudios secundarios actuales.

Las matemáticas son las que principalmente necesitan ese cambio. Es preciso, en efecto, que éstas, que constituyen el único idioma ideográfico que poseemos, y por lo mismo el único susceptible de traducir con rapidez, concisión y energía el proceso riguroso y lógico del pensamiento, reúnan las condiciones más adecuadas, para que despierten, ejerciten y den materia a las facultades del alumno.

No es posible que las lecciones de álgebra elemental, que ni siquiera dan idea de la ciencia, llenen estas condiciones, aunque se las haga, como es costumbre, largas y enfadosas, con ejercicios que no aumentan el caudal de conocimientos, ni dan expedición para orientarse en el campo de la ciencia moderna.

Crear, como se tiene hecho, una mecánica elemental, una física elemental y una cosmografía ad hoc para dar razón y objeto a estos pobres estudios y hacer que un joven, cuando su espíritu ávido de nutrición, se forma, robustece y cristaliza, pierda, en todos estos estudios, cuatro o cinco años de lo mejor de su existencia, es un abuso, contra el cual, si siempre sería oportuno protestar, en una reforma, como la que propongo, es necesario proceder.

Debemos comprender, por otra parte, que no es bastante conocer la estructura y construcción de un idioma, para dominarlo, sino ejercitarse en él, traduciendo todos los conceptos que es susceptible de expresar. Preciso es por lo tanto, que nuestras matemáticas elementales contengan cuanto la ciencia comprende totalmente, con un nuevo plan de exposición sencillo, racional y riguroso.

En la imposibilidad de consignar, en esta breve reseña, cuanto a mi juicio debía reunir esa nueva exposición, creo oportuno indicar los criterios generales que pudieran guiarnos tanto en éstas como en las otras ciencias, para conseguir un mínimo de exposición, con un resultado satisfactorio, desde el punto de vista de la reforma.

1. Tratar en un solo punto todas aquellas exposiciones que son variantes de un mismo concepto fundamental.

2. Procurar que todo proceso simbólico se aclare y evidencie con el correlativo y espontáneo del espíritu que los símbolos traducen.

3. Modificar en algunas teorías, el procedimiento demostrativo que las vuelve largas, y monótonas y aun difíciles, con la introducción de lemas oportunos y expresiones verbales de significación convenida.

Para esclarecer estos conceptos con ejemplos, permítaseme recordar que las teorías de las derivadas y las diferenciales, por el caso, podrían hacerse en una sola exposición, sin necesidad de volver después a tratar el mismo tema, con otro proceso demostrativo; siendo bien entendido, dicho se está, que se ha electo uno que comprende bien las dos categorías. Tal sucede con los logaritmos, las exponenciales y las exponenciales y sobre todo, con las funciones circulares, que podían muy bien exponerse a principios del álgebra, con rapidez, amplitud y procedimientos que permiten su desarrollo y calculo, desde cuantos puntos de vista se quieren.

En otras muchas exposiciones, se obtendrían indiscutibles ventajas, haciendo ver de un modo claro, cómo el simbolismo responde con todo rigor, a procesos que el espíritu emplea espontáneamente, en las cuestiones particulares que se ofrecen en determinadas circunstancias.

Así por ejemplo, cuando se trata de medir la curvatura de líneas o superficies, la noción de la medida se adquiere a favor de un elemento común con la línea recta y el plano. Este elemento lo traduce el analista por un diferencial y la medida por un integral. De este modo, el sencillo labriego que, con una cinta tomada a trechos, mide el arco de su rueda, fija el infinitamente pequeño, con el error aceptable, para obtener su integración, ni más ni menos que como procede el geómetra, desde un punto de vista general, en la teoría de las líneas y superficies curvas.

Consideraciones de este mismo género podían introducirse en numerosos procedimientos analíticos, para demostrar, que no son sino traducciones, en un lenguaje apropiado, de los procesos naturales del espíritu humano, cualquiera que sea la cultura que se le considere.

En importantes exposiciones del análisis, introducidas desde hace tiempo en la enseñanza elemental, se ha conservado, por una de esas tendencias del espíritu a conservar las cosas, toda la monotonía de las investigaciones primeras, que las alarga, oscurece y dificulta, cuando muy bien podía hacerse una exposición libre de repeticiones, que, sin faltar al rigorismo de la ciencia, nos condujera, por el contrario, de un modo más rápido y sencillo, al objeto que se lleva en mira. Esto podía tener aplicación, por el caso, en la teoría de las funciones continuas, de las series y en todas aquellas en que juega el concepto de límite.

Me he detenido, en estas consideraciones, con el solo objeto de probar que las dificultades, que podían suponerse en la nueva exposición completa de las ciencias, en forma elemental, tienen en realidad más de fantástico que de efectivo y que, por el contrario, una vez puesto el alumno, en un camino tan racional y lógico, del que no tardaría en darse cuenta, su avance sería cada vez con más provecho y prontitud, logrando con el caudal progresivo que adquiere, resolver asuntos que difícilmente comprendería, con las clásicas nociones tradicionales. Pero la principal ventaja no se reduciría solamente a esto, sino a la facilidad con que más tarde haría el estudio de aplicación en la mecánica, física, astronomía y demás ciencias que se presentarían para él, en sus procedimientos de adquisición, tan claramente como los propios fenómenos, ante los sentidos con que los observa.

Como el asunto en que ahora me ocupo, ha sido tratado ya por muchos y distinguidos profesores, que han enriquecido la literatura científica con preciosos modelos, no creo oportuno continuar en esta dirección.

En las otras ciencias, hay menos que agregar. La físico-química y el análisis químico y mineralógico, así como la mineralogía y geología, deben formar incuestionablemente una parte de los nuevos estudios.

Todas las ciencias propiamente dichas podían colocarse en tres series paralelas durante cinco años, en cursos de cuatro a cinco meses, que son los que mejor convienen, a la instrucción variada.

El estudio de las letras, el hebreo o sánscrito e idiomas modernos podía llenar otras tres series paralelas a las de ciencia, en los mismos cinco años.

Al proponer la introducción del hebreo o sánscrito, sus cábalas y ciencias tradicionales, obedezco a la necesidad social que se impone y se satisface ahora estudiando el orientalismo en fuentes viciadas. Parece oportuno con este motivo, si no dar a conocer, recordar al menos la opinión de un núcleo de verdaderos sabios europeos, quienes afirman que aquellas lenguas y alguna otra poco conocida fueron creaciones de cuerpos colegiados, para dar vehículo a las verdades de su profunda ciencia, del mismo modo que el álgebra moderna a las que informan nuestras matemáticas.

La sentida necesidad de tal idioma prueba, a mi humilde juicio, que había, en aquellas remotas épocas, un grado de cultura del que difícilmente podemos formarnos concepto en nuestros tiempos y con mayor razón, si se considera que la misma expresión simbólica correspondía a tres órdenes de verdades diferentes, según la clave con que se la interrogaba.

Si se piensa que una ciencia se forma de las diferenciales que un medio da cuando en él se investiga, con determinados elementos fijos, es evidente que una misma ciencia pueda recibir diferentes expresiones de la verdad, que traducirían simbolismos diferentes.

Nada extraño sería, por consecuencia, que humanidades anteriores hubiesen interrogado tanto como nosotros o algo más, los mismos medios que hoy estudiamos, y hayan expresado por consiguiente, las verdades encontradas con formas muy diferentes de las nuestras, las cuales se escapan a nuestra comprensión, si no poseemos las claves respectivas.

Asegúrase en confirmación de esta sospecha, que los pueblos de aquellas épocas, tenían períodos y ciclos fundados en movimientos de las estrellas, que aun no ha determinado nuestra ciencia moderna, y que todos sus conocimientos de la naturaleza los sintetizaban en la astronomía que, a diferencia de la nuestra, abarcaba la fisiología del cosmos. Si todo esto es verdad, y así se explica como, hasta en tiempo de los caldeos, se resolvían con certeza y facilidad altos problemas, que hoy ni siquiera sabemos formular, hay poderosas razones de otro género para introducir en la enseñanza los estudios de las ciencias tradicionales, a fin de estimular la investigación de la verdad de todas estas cosas y, si posible fuera, restablecer los perdidos fundamentos.

En resumen, los tres géneros de conocimientos propuestos: científicos propiamente dichos, histórico-científicos y literarios satisfacen las tendencias de nuestro espíritu moderno y son, por lo tanto, los llamados a formar el elemento de cultura, poniéndolo a cubierto de toda instrucción viciosa. He aquí a mi entender, el objeto y fin de la enseñanza general o intermediaria.

Planteado así el problema, queda aun por especificarse los conocimientos científicos, su extensión real, su profundidad filosófica y sus aplicaciones a las artes e industrias. Parece que el medio más práctico de resolver estas cuestiones sería formar una enciclopedia de la enseñanza general, la cual podría confiarse a una delegación internacional que, disponiendo holgadamente del tiempo que necesita, se reuniera en uno de los centros universitarios que les facilitara obras, elementos, visitas a establecimientos de todo género, relaciones con eminencias, que auxiliasen con su ilustración y, en caso necesario, colaborasen en los temas difíciles.

Tal enciclopedia además de los ramos de enseñanza, contendría artículos ilustrativos y bibliografía de cada uno, para guía de las personas que quisieran profundizar la materia.

La misma comisión internacional formaría gabinetes, laboratorios y museos típicos para el completo estudio de las ciencias y uniformidad de la enseñanza continental.

Mientras esta obra monumental se lleva a efecto, los gobiernos podían confiar a asambleas de profesores la redacción de programas provisionales, arreglo de edificios, redacción de reglamentos y cuanto fuera necesario para la instalación de los nuevos centros, los cuales podían ser sostenidos por una renta especial, impuesta al capital en cada una de las ciudades que deban contenerlos, quedando al gobierno la inspección y vigilancia, para la buena marcha de todo y estímulo de los profesores.

Podían darse leyes especiales que garantizasen el profesor a la sociedad y al profesor sus medios de cómoda existencia, aun teniendo en cuenta los accidentes imprevistos en el ejercicio de su profesión, que de esta manera, libre el maestro de cuidados, podía consagrar el debido tiempo al perfeccionamiento de sus estudios.

Altamente recomendable creo que, no ya por simple costumbre, sino por precepto de la nueva institución, los profesores de los diferentes centros alternaran en la enseñanza de sus asignaturas, que de este modo los alumnos, supremos jueces en asuntos de competencia, sabrían poner a prueba la de sus maestros del mismo ramo para el mutuo provecho.

Juzgo por demás tratar del carácter de preparatorio que, para los cursos de las grandes escuelas, debía tener esta enseñanza general, porque ella, de por sí, es eminentemente preparatoria de cualquier estudio superior y propia hasta para dar al especialista un criterio universal, que sería evidentemente provechoso desde todo punto de vista.

Dicho se está que esta reforma implicaría una delimitación más precisa en las otras categorías de la enseñanza.

La primaria quedará exclusivamente para el cultivo del individuo, desde el punto de vista de los fines prácticos de la familia y de la sociedad; y responde inmediatamente a la nutrición. De la primaria se pasaría a la oficina, al taller y a las profesiones industriales menores.

La secundaria o general se encaminaría a formar el elemento culto en toda la extensión de la palabra, correspondiendo al sentimiento creador, a la energía vital, a la respiración. De sus aulas saldría el escritor, el poeta, el periodista, el director de oficina, el candidato político, el jefe de partido, el preparado para la universidad, para la alta escuela de ingeniería, para el laboratorio, para el museo. Es el elemento de la civilización en su parte tangible, en su carácter plástico.

Creo pues, en consecuencia, que la enseñanza primaria superior debía subir algunos puntos, dando una instrucción más formal de gramática, aritmética, elementos de álgebra, geometría, física, química y ciencias naturales.

De este modo, el graduado de primaria estaría apto para todas las profesiones prácticas, que vienen fomentando y especificando cada vez más el comercio, la agricultura, los talleres y la industria. Profesiones menores, pero diplomadas por institutos especiales, que se van acreditando con el tiempo.

Garantizada por la nación, el núcleo de conocimientos primarios, en nada afectan estos diplomas, que más bien sirven de estímulo a la erección de centros de instrucción especial, útiles desde todo punto de vista.

Por su parte, la enseñanza secundaria tiene, además de su objeto propio, como ya hemos dicho, la preparación por excelencia de la profesional, porque no sólo atiende a toda especialidad, sino que da *a priori* y *a posteriori* al especialista, un criterio inapreciable para relacionar sus conocimientos y, por decirlo así, hacerlos irradiar en el medio para utilidad de todas las otras especialidades de la ciencia total, que necesariamente tiende a una síntesis superior.

Fuera de la ciencia clásica la experimentación moderna abre cada día nuevas fuentes al conocimiento y progreso humano difíciles de clasificar en el plan de la reforma, que,

sin embargo, las ha de contener, en fuerza del principio que la reclama y sustenta. Teorías completas y fecundas que hoy son del exclusivo campo de la escuela de medicina, bien podían trasplantarse a este nuevo organismo, ora formando parte de antiguas asignaturas, ora constituyendo nuevas. El tiempo y la experiencia serán los encargados de esclarecer estas cuestiones que apenas me atrevo a señalar.

Para la aplicación de los conocimientos que se adquieran ya se ha indicado en el programa lo más conveniente, a mi juicio, sin embargo de eso, cuando los alumnos dominen los conocimientos fundamentales, los profesores del ramo o ingenieros especialistas podían conducirlos a visitar los grandes trabajos, maquinarias, fábricas, talleres, centros agrícolas e industriales, minas e instalaciones, para darles conferencias que les aclaren hasta los últimos detalles y hacer que saquen fotografías, dibujen levanten planos y tomen notas.

Podrían también crearse laboratorios industriales que correspondieran principalmente a las industrias que fuesen propicias al país por su suelo, flora y condiciones.

Todo esto, más que compatible con la enseñanza, es necesario para su completa inteligencia.

Fuera de lo dicho, las ciencias que solamente son aplicaciones de las otras, como la geodesia y la topografía, podían dilatarse un poco con artículos de ingeniería afines, como trazados de caminos, puentes sencillos, habitaciones rurales, medida de corrientes, fuerza motriz de cascadas y de otros conocimientos útiles.

Llegado a este punto, quiero dirigir una mirada retrospectiva: Propongo un nuevo plan de enseñanza intermediaria, fundado en la necesidad social ineludible de proteger y regular el desarrollo del elemento orgánico que se llama "cultura." Este elemento en su evolución obedece a una ley psicológica colectiva tan poderosa en el medio social como el endémismo en el fluidico. Su descuido es fatal a los pueblos, porque da origen a corrientes impulsivas que no admiten fuerza contraria capaz de contener el efecto, tanto más funesto cuanto más se retarda.

Lo que importa es regular la corriente, dejando intacto el ideal humano que la impulsa.

Para esa regularización, propongo que se funde una institución social o gubernamental, en que se dé una enseñanza totalizada, que exponga, con toda limpieza, la ciencia pura y la creación del pensamiento humano.

Para el estudio de este último punto, las dificultades provienen de la falta de conocimiento de las claves científicas de otras épocas o de la dificultad en la traducción de conceptos o de la autenticidad de las obras. Una traducción de los Vedas o del Génesis carece de toda importancia, porque las llaves son relativas al idioma original y no al traducido, y, por esto, el estudio debe hacerse con posesión del idioma, sus cábalas y cuantos medios da la tradición. Una regla semejante debe seguirse en la interpretación de las mitologías y muchas obras filosóficas de la antigüedad, aun tratándose de Grecia misma.

Por lo expuesto, se ve que mi verdadero propósito no ha sido exponer un plan preciso de reforma de la enseñanza intermediaria, sino indicar la conveniencia de formular tal plan, si se da a los hechos que señalo, la importancia que para mí tienen.

Sea, en fin, bien entendido que al dirigirme en esta forma al egregio congreso, a que tan gentilmente he sido invitado, no llevo el propósito de alterar en lo mínimo el sesato y ameritado programa, cuyas proposiciones se someten a nuestro criterio, sino llamar sencillamente la atención de las ilustres personalidades que lo forman para que cada una individualmente valore las ideas expuestas y examinen si en realidad hay algo que contribuya a ensanchar el campo de nuestra actividad intelectual, a asimilar nuestros ideales de pueblos americanos y a aunar nuestras energías en el común destino que ha de realizar el continente de Colón.

READJUSTMENT IN ELEMENTARY AND SECONDARY SCHOOLS IN RESPONSE TO CHANGING INDUSTRIAL AND SOCIAL NEEDS.

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It would be a bold and reckless man who would state that the elementary and secondary schools of the country had at any time in their development been adjusted to provide adequate educational facilities adapted to the industrial and social conditions of the country or community at that particular stage of development. In the early stages of educational development in this country tradition, financial limitations, industrial and social standards determined very largely what the schools should undertake to do when established and the character and extent of the subsequent development of work in these schools.

The college and the elementary school came into existence together in this country. The private academy or the preparatory department of the college bridged the chasm between the elementary school and the college. The secondary school system was a later development. It came largely in response to a demand for preparatory schools for the college and for support of such schools by public taxation. In the main they have come into existence and have continued to exist as preparatory schools for the college. Under such conditions it was only natural that the influence of the higher educational institution should determine, or should be the dominant element in determining, the course of study in these schools and the character of their development.

There are many people who to-day are criticising with great severity, the college and university for the dominating influence they have exerted upon the secondary schools. They forget that there has been no other influence available so permanent, so stimulating and so salutary for the development of the secondary school as the influence of the higher educational institutions. We are justly proud of our splendid system of secondary schools. We expend millions of dollars annually for buildings, equipment, and maintenance of these schools. This is evidence that the people of this country believe in secondary education. With the secondary school system coincident with the expansion of urban life, came the development of the graded school system. Its course of study has been largely influenced by the secondary schools. As the secondary schools were preparatory for the college and the university, so the graded schools became preparatory schools for the high school. In rural communities the courses of study for the one-room rural school became a diluted solution of the course of study of the graded schools of the cities. Thus we see that as the demands of the college and the university determined very largely the scope and character of the work in the secondary schools, so they in turn have influenced the course of study in the elementary schools.

Changing industrial and social conditions made apparent and emphasized the fact that the traditional college courses are not adequate for the increasing demands of our developing life, and in response to the recognition of this fact technical, professional, and commercial schools of high rank have come into existence in large numbers. They have come as an addition to our educational system, but at the same time there has been a strengthening of the old traditional courses in the scope of work already offered and in the character of instruction given. This enlargement in the scope of educational facilities through which men were directly trained for vocations as distinguished from the so-called liberal education through traditional college courses, came gradually and in response to a recognized need.

Within the last few years there has been steadily growing in this country, a belief that the secondary and elementary schools are not adequately providing educational facilities to meet the industrial and social needs of the community. The belief is becoming general that it is not enough to train leaders in the industrial and commercial

world, but that the rank and file need opportunities for training which shall increase their efficiency, their earning power, and their consequent ability to provide themselves with what would better their social standing. There is a belief that the rank and file need a training, which they are not now getting in the schools, in the duties of citizenship as well. This does not mean that our schools shall no longer prepare young men and women for higher educational institutions nor that our elementary schools shall not adequately prepare boys and girls for the secondary schools, but it means the demand for an enlargement and readjustment of educational facilities.

The pronounced agitation in recent years and the positive legislation in a number of States, and agitation for such legislation in other States for the establishment of continuation schools, are striking evidence of this widespread sentiment in favor of the enlargement of our present educational facilities and adjustment of them to meet existing industrial, commercial, civic, and social conditions.

It is probably true that the sharp competition of industrial products of other countries with our own in the markets of the world and the study of the causes of this destructive competition have been the most potent influence in the present demand for industrial education for the rank and file of the workers in the industries. In the minds of many the only problem is to create more efficient producers, but in the minds of most that is only one side of the problem. With this great majority the idea of better training for citizenship and for life is equally important.

It is only recently that we have begun to appreciate the limited range of education secured by the majority of the young men and women in this country. Seventy-five per cent of the entire school population of the United States leave school at the end or before the completion of the elementary course and the majority of them with not to exceed more than six years of schooling. Large numbers have thought that the children were leaving school because of necessity; that they were needed to help support themselves and the families of which they were members, but careful investigations in different parts of the country make it clear that not more than one-third of this number, or 25 per cent of the whole school population, are compelled to leave school by the pressure of necessity. This means that 50 per cent of the school population of the United States are leaving school at an early age, at about 14 years, because they do not choose to remain in school longer, and they do not choose to remain in school longer because the work in the school is of a kind that does not appeal to them as being worth while, nor does it make sufficient appeal to their parents to cause them to keep their children in school longer. We may believe, and doubtless do believe, and it is probably true, that they would be benefited by remaining in school, even through the secondary school course, but they do not believe it, and therefore it does not matter what we believe. If they are to be reached and have the advantages of further schooling, some sort of school work must be offered them which will make an appeal to them; an appeal which will be effective as offering a training that will increase their wage-earning capacity, vocational training, if you please. The higher technical schools are vocational schools. They appeal to the majority of those entering them because they believe that a course of training in them will fit them for desirable positions financially and socially. It is the same belief, with the financial argument the dominant one, that is held by this 50 per cent of the school population and by their parents.

The boy or girl leaving school at 14 years of age is too young to enter upon an apprenticeship, because employers do not wish to take apprentices at that early age. There is, then, open for them nothing but low-paid, unskilled labor, which will always be low paid and unskilled and which leads to nothing better. The period from 14 to 16 is a drifting period. The child drifts from one temporary job to another, with probably the larger portion of the time unemployed, and the period of unemployment is the period during which habits of idleness are developed and vicious tendencies come into existence. They are the schooling periods for the juvenile criminal, and a large

number of the criminals in the juvenile courts have received their impulse to a criminal career through lack of proper employment. We are just beginning to ask ourselves whether the secondary school system, organized and administered for preparing young people for college, is meeting the requirements when 75 per cent, at least, of all the school population of the country never enter the high school; when 40 per cent of those who do enter drop out by the end of the second year, and 20 per cent more drop out without completing the course, and of those completing the course not more than 25 per cent enter college or the university, and of those who do enter a considerable number do not complete the college course.

This does not mean that the students who enter the high school and remain in it for even a single year are not benefited, but it does raise the question whether, if proper facilities for vocational education were offered during the high school period, a larger number would not avail themselves of this opportunity and be greatly benefited thereby. It does not mean that the facilities for preparing students for institutions of higher education should be lessened, though it may mean a modification of the requirements for admission to the higher educational institutions. The fact that these requirements have been changing year by year indicates that they may possibly be further changed without lowering the standards of the institutions and with positive gain to the students of the secondary schools.

The foregoing statement of conditions seems to indicate very clearly that the greatest educational problem before the American people to-day is to bring about such a development and adjustment of our elementary and secondary schools as will result in keeping the 75 per cent of the school population who leave the elementary school at or before the completion of the eighth grade work in school longer, not through compulsion, but through the organization of such instructional and training material and facilities as shall result in increasing vocational, civic, and social efficiency and which shall bring about the same result for the 60 per cent of those who enter the high school and do not complete the high-school course.

The problem naturally divides itself into two parts. The first concerns that number who leave school because they must, to help earn a living, and the second concerns those who leave from choice because the school does not appeal to them. At the present time interest is focused most directly upon the first group, and yet when we consider that this group is only one-half the number in the other group, it appears that we are neglecting the larger number.

Those of the first class must go to work and they do engage in work without adequate preparation in either mental or motor training. For them the continuation school is the only solution of their educational problem. It should present work organized with special reference to their needs in the industries in which they are engaged and for their needs as citizens. It can require attendance but a few hours a week, and therefore can do only a small portion of what could be done were it possible for them to give their entire time to school work, yet it is of great value for the boy and girl with any ambition for advancement, and it is the best that can be done.

Those of the second class are not under the necessity of working for wages. The great majority of them can and will remain in school if the type of work there be of the kind that appeals to them and to their parents as likely to increase their wage-earning capacity. To fail to provide that sort of work in the public schools and to say to the young people in this class, "If you do not like the schools as they are, leave them and go to work, or loaf, as you will, and we will provide a continuation school which you may attend a few hours a week and which will serve your purpose," is to put a premium on their withdrawal from the public-school system, both to their hurt and to the injury of the public school and to society. It also adds to the work of the continuation school a class of people not the most desirable; they are not working because they are obliged to work, but because of love of novelty, or because they

wish to increase their spending money, and work is not so serious a thing to them as to awaken a strong desire to increase their efficiency through the continuation school.

Perhaps Germany has come nearer the proper solution of the continuation school problem than any other country, but it has taken nearly half a century of agitation, discussion, and experiment to reach its present stage of development, and to-day in Germany there is a great difference of opinion regarding these schools. There is much opposition to them still in many quarters and hearty support of them in others. We can learn much from Germany's experience and thus save some time and experimenting that it has cost Germany, but we can not transplant German conditions to this country. We have still the same problem that Germany has had—that of educating the public and arousing public sentiment to the point of action, and we have not the same centralized forces available for securing such action. During these years of experimenting Germany has formulated a body of knowledge and put it into form for instructional purposes in continuation schools adapted to the needs of those employed in the different industries which we have not yet begun to organize.

For many years the courses of study in Germany's continuation schools were little more than cross sections of the course of study of its public schools, but they have come to recognize that the instructional matter adapted to the needs of the continuation schools is of quite a different type from that given in the elementary schools. We shall have to begin as best we can, but we shall gain much by appreciating the necessity for this organization of material for instruction, and by beginning upon it at once. Germany began, as we have begun, by putting in its continuation schools as teachers those who were employed in the day schools. Its early continuation schools were night schools as ours have been up to the present time. It has taken them many years to reach the point where the night school has given place to the day school with compulsory laws requiring employers to give young people in their employ time for this work during working hours.

Germany found, as we have found, that the public school teacher employed during the day in public school work is not the best teacher for the continuation school, and especially so if anything is undertaken beyond a small section of the public-school program. It is only in recent years that Germany has introduced shopwork to any extent into the continuation schools, and practically the only teachers available for this work have been shop workmen. While a thorough knowledge of shop processes is essential for the teacher, it is equally essential that he shall possess skill as a teacher. Shopmen have not been trained for teaching, and while a few of them may possess natural ability as instructors, most of them are lacking either a native or acquired ability of this kind, and it is only within recent years that Germany has begun working out systematically a course of training for shop teachers in the continuation schools. That it has entered upon such an undertaking shows that experience has demonstrated its necessity. We may profit by that experience, but we must remember that it took Germany 50 years to reach the stage of development and understanding of the problem where it was ready to even make a beginning in this line. It ought not to take us that long.

Law, tradition, and custom unite in Germany in demanding that much longer time be given in preparation for teaching, even in the elementary schools, than in this country. The German people have become accustomed to this condition and accept it as a matter of course. For this reason it is possible to organize a course for the training of teachers for continuation schools that will require three years for completion, to be supplemented by an additional time devoted to shop work. In view of the time required to prepare for teaching in other types of schools in Germany, this does not seem excessive, but in the United States, if such a course were to be offered to-day, no one would take it.

We must accept a shorter period of preparation. We shall have to make the type of training schools for this class of teachers one that will not be too widely separated from

those schools that now prepare teachers for manual training and domestic science. The people who take this latter training are the ones most likely to specialize for teaching of particular lines of work for continuation schools. People will not prepare for teaching in a type of school that does not exist, or of which there are very few. Such schools must develop with the best teaching force they can get, and must exist in such numbers and with such standards as will create a demand for better trained teachers at good salaries. As this demand is created it will undoubtedly be met.

At the present time the immediate question for each community is, What can be undertaken at once in the way of continuation school work that will be adapted to the needs of the boys and girls who, by pressure of necessity, are compelled to leave the public school and go to work. In practically every community the development of this work is handicapped by the lack of buildings, equipment, efficient teaching force, and knowledge of the extent and character of the industrial demands of the community for these young people, and also by the lack of definite standards as to what should be accomplished, and by lack of intelligent interest on the part of the public. In many localities the lack of buildings may not be serious where vacant rooms in public school buildings are available, or where shops in the public schools may be utilized. In other cases temporary arrangements may be made by renting vacant rooms, which may be used for instructional purposes. In some cases manual training and domestic science equipment may be used for such portion of the continuation school work as can be carried on with this equipment. Probably the first thing that is needed is a careful determination of the different kinds of work in the community and the quantitative demand it makes for instructional work. The present number of boys and girls employed in any particular industry in a community, with the probable increase or decrease of that number, must determine the extent and character of the immediate demand for instruction in that field.

A careful consideration needs to be given in order to determine not only the extent of the demands, and so the prospect of employment for boys and girls in the different industries of the community, but also the wages paid in these different industries. This census should be general, so that the individual may know the opportunities for employment and for increase of wages in employment not only in his home community, but elsewhere. With data at hand, and with a knowledge of the number of boys and girls now actually employed and needing instruction, it is possible to determine the various kinds of work that should be undertaken in a continuation school. It is altogether probable that not all of these various lines of work can be organized in any community at the outset. In determining which ones shall be organized, several conditions must be considered. Among these are:

- (1) The number of people in any one industry needing instruction, having in mind the rendering of the greatest service to the greatest number.
- (2) The necessary cost and time required for providing rooms and equipment for instructional purposes.
- (3) The possibility of securing a competent instructional force.

Because it may not be possible to organize immediately a particular kind of work for which there may be a considerable demand, is no reason for not undertaking other kinds of work, which can be organized, and so meet the needs of at least a portion of those needing continuation school work. Because it may not be possible at once to do complete work, which a high standard of what should be undertaken demands in any particular line, is no reason for not attempting to do that which is possible and worth while. Even a limited range of instruction directly related to the industrial activities of the pupils, though it may not involve a large amount of the practical work they are daily employed in doing, will be of value to them and will pave the way for an intelligent development of this work to the highest point of efficiency.

The necessity is evident for a formulation of standards as to what is worth while in the way of theoretical knowledge directly related to the various industries; of the practical

knowledge and skill in workmanship that it is possible to develop in the continuation schools, and of the general knowledge essential for an efficient workman and good citizen, all having direct relation to the best capabilities of those being instructed. But here again, it is not wise to delay beginning work until these standards have been worked out. It is probable that the only way in which they can be determined is through a careful study by practical men in the industrial world, working with educational experts in the actual administration of work in the continuation school.

At the outset we must not be disheartened by the lack of competent teachers, or the lack of organized material for instructional purposes. We must do here as we have done elsewhere in the educational field; namely, the best we can, and as early as possible set about the development of better conditions as to teaching force and material for instruction. In many instances the shop-trained men would be the best available teachers for the pupils who are employed in their particular kind of shop work. In other cases no such men may be available, while a teacher of manual training may be available who has had such preparation for his work as will enable him to render efficient service as an instructor. As the demand for this class of instructor grows he will realize the need of added preparation for this field of work and will secure it.

Because of the character of the work in which girls are employed in the industries it will in many cases be a difficult task to develop courses of instruction in the continuation school that will immediately and directly increase their efficiency and their wage earning power, but as the great majority of these girls sooner or later assume the responsibility of managing a home for which they have had no preparation the continuation school will afford an excellent opportunity for instruction in this field. The material for this instruction has been reasonably well worked out in its more practical forms, and at any rate in most communities efficient teachers in this work are available. This does not mean that no attempt should be made to organize work in the continuation school for girls looking toward increased efficiency in industry. On the contrary such lines of instruction should be opened up wherever possible; but everywhere it is possible to begin work in the continuation school, designed to increase the efficiency of the girl when she becomes a woman in charge of her own home.

To sum up: In the development of the continuation school there is need for careful determination of the demands in any community for industrial education; the extent of the demand; the number of those to whom this demand appeals; the extent and quality of the work that ought ultimately to be attempted, and of that which may be immediately attempted. This determination to be followed by every possible effort on the part of the State and local boards of industrial education; of public school officials and of all who are interested in awakening the general interest of the public in the possibility of the work, to be accompanied by prompt action in undertaking the work which under local conditions can be most readily organized with the greatest certainty of success, and this to be followed by a development of additional lines of work in the order of their need with due recognition of local conditions likely to interfere with or to aid in their development.

The solution of the second part of the problem has not been attempted except in sporadic cases in this country and elsewhere. It should be taken up at once and vigorously attacked. We shall do well to proceed along the line of least resistance.

In the large city systems separate schools may be organized for this class of pupils, beginning with the sixth or seventh grade, and offering at least two years of work beyond the elementary school. At least one-half of the time during the whole period should be given to shop and laboratory work and the other half to carefully organized instruction in the essentials of the present school curriculum for these years, supplemented by special instruction in matter related to the vocation for which the individual is preparing himself.

Until the completion of the elementary school period the work in these schools should not be vocational in character, but what is perhaps well termed prevocational. That is, it should offer a wide range of training in the use of the hand in dealing with a considerable variety of tools and materials in order to develop the kind of thought that results from the stimulus of industrial agencies and activities and coordination of mental and motor activities in definite constructional processes.

This period will give the pupil the opportunity through the wide range of work offered to determine something rather definite as to the vocation which most appeals to him and for which he is best adapted.

During the next two years the work should be distinctively vocational in character, with the same relative proportion of book and shop work. This kind of training will not produce skilled workmen during this short period, nor at the age of pupils who are taking it, but it will develop capacity in them to think in terms of things, materials, and processes, and adaption of means to ends in constructive work that will carry the individual well along the road toward industrial efficiency. It will greatly increase the wage-earning power of the pupil over that of children of the same age without such training. It will appeal to them and to their parents because of this fact. It will stimulate mental activity in a large number of pupils who are not so stimulated by words upon the page of a book. This mental activity so stimulated will in many cases result in greater capacity and interest in acquiring knowledge through the study of books.

All that has been said heretofore with reference to the organization of material for instruction for continuation schools applies here.

In the smaller cities and villages it may not be feasible to organize separate schools, but the work in manual training and domestic art and science given in these schools at the present time may be very easily extended and varied and so modified as to meet the requirements of the children of those schools. In the one-room rural school little of this work can be done. The secondary schools of agriculture, as provided in some States, and definite instruction in agriculture and home economics in existing secondary schools under proper conditions will best meet the needs of the rural-school population. The consolidation of the rural schools, however, is the best possible solution of the most pressing problem in connection with the education of the country girl and boy. The consolidated school offering work through the elementary grades and two or more years of high-school work will present the same opportunities for the kind of training advocated as may be presented in the small city or village school.

There are many people who object to any serious modification of the elementary or secondary school course of study because they fear the loss of some intangible thing which they conceive to be beneficial in the existing course. Granting the value of this intangible thing to those who remain on through the high school, it has no value for those who never enter the high school nor for those who leave the elementary school before they complete it. It is for this 50 per cent of the school population that the proposed modifications of the existing elementary and secondary school courses apply.

When the reorganization and adjustment of the courses have been made to meet the needs of the 75 per cent of the pupils of the public-school age herein alluded to, there still remains our important problem in the further readjustment of courses of study for the 25 per cent who complete the elementary-school courses and who enter high school. This readjustment will consist in eliminating the nonessentials of the present course of study. The present course of study in the elementary school shows very large additions to the three R's of the early elementary school, but as new subjects have been added very little, if anything, has been subtracted. Time will not permit any discussion of this phase of the subject, but it is safe to say that from one-third to one-half of the material in the present elementary course of study may be eliminated

and nearly, if not quite as much, of the secondary-school course, not only without loss to the pupil in the way of usable knowledge but also without loss in the way of material which affords substantial mental training.

The CHAIRMAN. Chancellor Brown, chairman of the subsection on secondary education, has asked permission to make an announcement.

Mr. BROWN. The subsection on secondary education has the duty of appointing a committee on resolutions. I may say that it is uncertain whether this committee will have any business to perform, but it is appointed in case any resolutions are presented. This is in accordance with the request of the management of the congress. I will appoint on that committee L. D. Harvey, of Wisconsin; William C. Ruediger, of George Washington University; and Sr. Darío E. Salas, of Chile.

Adjournment.

SESSION OF SUBSECTION 6 OF SECTION IV.¹

GEORGE WASHINGTON, UNIVERSITY,
Thursday afternoon, December 30, 1915.

Chairman, GARDNER C. ANTHONY.

Session was called to order at 2.30 o'clock by the chairman.

Papers presented:

Extent to which practicing engineers may take part in engineering teaching, by R. V. Norris.

Opportunities and problems confronting the engineer in South America, by Elmer L. Corthell.

The relative importance of general training in engineering branches to extreme specialization, by William H. Burr.

The study of engineering education by the Joint Committee of the National Engineering Societies, by Charles R. Mann.

THE PRACTICING ENGINEER'S PART IN ENGINEERING EDUCATION.

By R. V. NORRIS,

Consulting Engineer, Lecturer on Coal Mining Harvard and Columbia Universities.

The engineering graduate may be expected to have a good grounding in principles, and usually has in addition some knowledge of practice, from the instruction, necessarily generalized, which he has received during his engineering course. The question arises: Can the practicing engineer, usually a specialist, be of assistance in engineering education; and if so, how and to what extent?

Looking over the courses required for an engineering degree in the various institutions of high standing, it appears that normally about two-thirds of the student's course is taken up in the study of general fundamentals, mathematics, physics, properties of materials, thermodynamics, electricity, surveying, chemistry, drawing, and the like, the greater energy being expended upon those subjects most germane to the course to be pursued, and that about one-third of the time is devoted to further studies in the particular branch of engineering selected.

The faculties and teaching staffs of our engineering schools are composed generally of men eminent in particular branches of the profession, but it is futile to expect that the professors can devote the greater part of their time to their classes and the necessary additional work incident to the instruction and control of a body of students and still manage to keep absolutely up to date in all the branches which they are required to teach.

If it were financially possible the ideal organization for an engineering course would be a duplicate one, all instructors spending alternate years in the field and in teaching,

¹ No stenographic report of this session.

such an organization might be expected to be able to discuss from personal knowledge the latest developments of practice and give its students at least an outline of the actual conditions prevailing in the various branches of engineering.

Such an organization, which could only be attained by consolidation of the resources and staffs of several institutions into one great engineering school, does not seem within the limits of present probability, and it remains for the graduates either to complete their education in the hard school of experience, at the expense of their employers, or for them to draw at least a part of this normally postgraduate education from engineers actively practicing the particular branch of the profession which they aspire to follow.

The experience and special knowledge of the practicing engineer can apparently be drawn on in two ways:

First. By personal contact. During vacations the student can and should be assigned special studies in the field under the tutelage of friendly engineers not connected with the teaching staff, usually alumni of their own institutions. These studies may be made either in the form of actual work in minor positions or better as observers, studying operations and methods, in any case required to keep full notes, which should be later examined and criticised. Actual work has the advantage of the possibility of earnings sufficient to cover expenses, but to the observer comes the greater advantage of more widely spread observation and an opportunity to more fully study the procedure of an entire operation rather than to become perhaps expert in a single phase.

Second. By lectures from specialists included in, and in extension of, the college curriculum, supplementing the regular classroom work and generally giving students at least an inkling of the most recent practice and methods.

As an indication of the extent to which such special lectures are utilized, the last bulletin of Columbia University, Schools of Mines, Engineering and Chemistry, New York City, announces no less than 45 such outside lecturers, for the year 1915-16, all men of eminence in their respective branches of the profession, besides these lectures numerous "talks" are given by alumni and others, the whole resulting in giving to the student a broader view point, and a considerable, though probably superficial, knowledge of the most recent advances in various professional lines.

A combination of the two methods of bringing the students into touch with actual practice, as is now done at most of the great engineering schools, undoubtedly results in giving the graduate a broader education and better fitting him for the early years of struggle necessary to the attainment of practical experience, than could the teaching of his professors alone, who in general can only be expected to have a book knowledge of many phases of the subjects they are required to teach.

Then the extent to which the practicing engineer may take part in undergraduate engineering education is probably limited to the giving of talks to the students in the classroom, and to providing for a small number the opportunity for vacation study, generally directed by the educational authorities, but helped by the active interest of the engineer.

Both these involve sacrifices of time and usually of money on the part of the older engineer, as few engineering schools are in a financial condition to offer remuneration commensurate with the value of the services they obtain, and when any is offered it is usually in the form of an honorarium about sufficient to reimburse the lecturer for his expenses in preparation and travel.

After graduation the engineering student, despite his degree, is far from being an engineer, and giving him the opportunity to continue his education to a point where his services become of real value, is the major service to be rendered by the older members of the profession, this may be done either through arrangements by which young graduates are rapidly passed through the various departments of an industry, as is now the practice of many railroads and manufacturing corporations, or in a smaller way by

the employment of young graduates in minor positions, coupled with personal advice, interest, and encouragement tending to fit them for rapid advancement.

The practicing engineer may also be of great assistance to the educational authorities in advising on the course of study best adapted to give the knowledge required of young engineers, and particularly in determining the relative time to be devoted to the various subjects taught, in eliminating unnecessary matter and substituting subjects which advances in practice have shown to be of great importance.

As the cost of educating an engineer is usually far greater than his tuition fees, it does not seem unreasonable to expect from the older graduate a willingness to give reasonably of his time and experience toward the education of a younger generation in partial acknowledgement of his indebtedness to his college, his teachers, and his early employers.

OPPORTUNITIES AND PROBLEMS CONFRONTING THE ENGINEER IN SOUTH AMERICA.

By ELMER L. CORTHELL,¹

Civil and Consulting Engineer.

This report must be broader in scope than the literal statement of the subject would imply. It will be necessary, as the report is submitted to the section on education, to enter first the field of education and attempt to state briefly the methods of education in South America compared with the methods in the United States, and then to give the status of the engineer in the two sections of the Western Hemisphere.

The character of the engineering works in South America will then be given and their various problems. The existing relations of the engineer of different nationalities will be explained and the financial methods of works stated.

The existing disadvantages of both native and United States engineers will appear from the discussion, and there will be drawn the lessons that the people of the United States must learn before they and their engineers may hope to successfully avail themselves of the opportunities existing, if not now, after normal conditions shall return to South America.

The subject therefore is of great importance and worthy of a more extended statement and discussion than is possible in the limited space of this report. It is hoped, however, that the summary statement of the case may lead to a discussion that will help to open up a wider opportunity to the North American and South American engineers in South America.

A general review of educational methods in South America would bring out the fact that they generally follow European methods, particularly, it may be said almost entirely, the French system, except in the lower grades, which have in several important particulars adopted the methods of primary education prevailing in the United States, education being compulsory from the age of 6 to 14. Secondary education from 14 to 19 is optional, so is university education from 19 to 25 or 26. But while primary education is by law compulsory, the sparsity of the population is largely responsible for inability to educate all the children. It will be seen from the following percentages of illiteracy how ineffective is the enforcement of the laws even in the countries where every possible effort, under wise laws, is made to educate the masses as the only solid basis of the Republic: Brazil, 80 to 90 per cent; Argentina, 50 per cent; Chile, 75 per cent; Colombia, 90 per cent; Uruguay, 23 per cent.

¹ Deceased May 16, 1916.

In the lower grades, and even in the secondary schools, while the curriculum is wisely arranged toward university education, the memoriter method is largely in vogue, long ago substituted by more rational methods in the United States. Without dwelling on the bases of education among the common people we must hasten on to university and technical education.

The university in South America, with its faculties of law, medicine, and engineering, is, in its general characteristics, fundamentally different from United States colleges and universities in that, with few exceptions, they are composed of professional faculties only.

The professors in these faculties are not really an integral part of the university, not giving their whole or even a major part of their time to it. That permanent teaching body of professors constituting the very center of life of the United States college or university exists nowhere in Latin America, being quite like similar institutions in Continental Europe. Outside of the president and administrative officers, who generally are government officials, there are few professors who devote all of their time and interest to university work. They are engaged in their own private business and go to the university three or four times a week to deliver lectures of an hour on their special subjects or courses. Consequently the professor usually has little interest in the general life of the institution. However, there are in the method certain advantages, one of which is that the instruction is kept in close touch with the actual problems and interests of life, in law, medicine, and engineering.

It results from this and other related features that there is really no physical unity of the university, and there is no unified student life, as in the United States. There is no campus, no dormitories, no class organization, no faculty. There are few common student interests. It might be said there is no university soul—that indefinable influence that abides through life and holds together great bodies of alumni in the United States.

Outside of these features the universities perform (and the Governments, as a general thing, provide for it) a very useful service in insisting that the professions, including engineering, shall be entered only through the universities or high grade technical schools, like the Polytechnic at Rio de Janeiro. The right of giving the doctor's degree to inferior schools no longer exists.

Formerly many schools, especially in Brazil, were able to give their students this coveted degree with its cap and gown; now the graduate of these schools receives only a diploma as a certificate that he has completed his course. The now extinct system of degrees led to abuses, especially in connection with official employment as engineers. Many men of real practical ability were kept out of places by men whose only claim to position was a title.

Now all this is changed generally in secondary and higher education. Formerly not 20 per cent of graduates as engineers from these schools practiced their profession, conscious that their title as doctor assured their future in other and less laborious walks of life. Now it is very difficult to obtain employment in the Government service without passing a competitive examination, or to advance without demonstration of practical efficiency in important and responsible work. Even if a foreigner, who is a graduate of the best universities of Europe or the United States, comes to a South American country to live and becomes a citizen, he must show from his home university that he is adequately qualified for the governmental position which he seeks, and even then he may be required to prepare a thesis to prove his ability to do things. This high grade of technical education, equal to that of any country in continental Europe, produces a high standard of qualification for the engineering profession.

Speaking broadly, while there is not among the graduates of the universities and in the professions that sentiment and influence that show themselves in alumni clubs and associations and in loyalty to a local institution, as in the United States, there is

a solidarity among university-trained men in the profession, and they exert a great influence in the community far beyond any such group or class influence in the United States. The author, with his large experience and intimacy with members of his profession in two countries of South America—Argentina and Brazil—gives this testimony and with it his high professional regard for the men educated as above described, and he, in comparing the men of this high class of educated professionals, who have had five years of secondary and six years, sometimes seven, of university technical education, states advisedly that the engineer thus educated makes a far more useful member of society and of his profession than a get-quick-education boy of the United States, who from high school takes a two-year course in a technical school and then with a diploma as bachelor of engineering, puts out his “shingle” as civil or mechanical or electrical engineer, and has often the temerity to put on his business card “Consulting engineer”!

Referring again briefly to the influence in society of trained technical engineers, reference is made to the Club of Engineering in Rio de Janeiro, whose opinions are considered of such value that the Federal Government is very likely to adopt them on occasions when the club considers it ought to speak pro or con on proposed national measures or action.

Coming now to the “opportunities” and “problems” confronting these engineers and those of United States engineers qualified to undertake important work in South America, it is necessary to consider past, present, and the near future general conditions.

The author, whose advice is frequently asked by engineers proposing to go to South America, will here only summarize the situation.

As a general thing, the local, municipal, and national works, so far as national railways are concerned, are under the charge of the engineers of the countries of whom we have been speaking. When works and railways are built and operated by foreign private companies with concession or charter rights and the money to build, operate, and maintain them is drawn from the home country of the company, almost invariably the leading engineers are taken from that country. For instance, the great railway systems of Argentina are built and administered by English companies and the money is English, therefore the management and the leading engineers, at least, are English.

If the railroad is French the French engineer is in evidence. If the port is built by an English or a French company as concessionaire, engineers from these countries have principal charge of construction and operation, although the works (their returns being generally guaranteed by the Federal Government) are under the charge of Federal inspectors and the Government department of public works is responsible for the plans and the correctness of the works and the statement of expenditures made by the company.

Such great undertakings as the port of Buenos Aires, the port of Rio de Janeiro, where contractors, not concessionaires, aid the work; the great municipal improvements of water supply and sewerage of Buenos Aires and several provincial (State) capitals of Argentina, Government railways of Argentina and Brazil—all such works are in charge of national professional engineers.

The author could mention several important port undertakings in South America where French engineers are in charge because the concessionaire companies are French, and the money comes from France. He might also mention important railroad and port works the legal companies of which have their domicile in a State of the United States, but where the personnel of the management and the engineers are mostly from France and England—and none from the United States and not many from the country in which the works are located—simply because the money comes directly from France or England.

The principal reason for this state of affairs is that the money that builds the works insists upon its nationals being responsible for the expenditures, which is entirely

proper and right. The South American countries do not generally have the capital for carrying out these great undertakings and are obliged to put them in the hands of Europeans, consequently the engineers of the country, if any, hold subordinate positions.

The United States has few engineers in South America for the reason that this country has not reached the point of such investments in South America, and until it does there are few opportunities for North American engineers on that continent. Under these conditions it seems to those who are well informed that it is out of place to talk of the great opportunities and the great field for United States engineers in South America.

Also the educated engineers of that continent will always be at a disadvantage for the same reasons.

The only large North American interests (in the author's knowledge) in South America and where United States engineers have built and are managing great properties, is the Brazil Traction Company, which built and is managing all the various features of the São Paulo and Rio de Janeiro Light and Power properties. There are large mining interests in the Andes, like the Cerro de Pasco mines, controlled and operated by United States interests; on the other hand, an English contracting company built the great Port of Para, the Port of Rio de Janeiro, the original port and its present enlargement of the Port of Buenos Aires and the Port of Valparaíso. The Port of Montevideo was built by the Government of Uruguay under German and French principal engineers.

There are many large problems before the countries and municipalities of South America—irrigation, hydroelectric powers, navigation works, sewerage and water works, railways extensions in various directions to occupy virgin territory—all to be taken in hand and developed when, after the present war, normal financial conditions again arrive to South America.

Then one of the greatest questions for early answer will be: "Whence is the capital for them to come?" This is a most important question. Europe, the financial source of all previous developments and capital, can not be considered available for many years, as its capital must go to build up its own devastated waste places and to pay the interest and principal of its immense indebtedness incurred by the present world war.

This will be the greatest opportunity in its whole history for the United States. Its great wealth, produced from its wonderful prosperity and from its peace in these times of international strife, when other nations are spending their lives and their wealth in war, should lead the statesmen and the financiers of the United States to get at this serious and important problem in earnest and now, and wherever the laws, though adapted to our domestic affairs, debar our people from entering into this great Latin American field, with its wonderful future opportunities for development, and for financial assistance to our neighbors to the south of us, these laws, rules, or regulations should be changed to suit the new conditions of export business and financing South America.

The author, in his report as a delegate to the Second National Foreign Trade Convention at St. Louis, January 21, 1915, discussed these important features and showed in considerable detail, by what means other nations had occupied the field above described, and he made, in his conclusions, several suggestions for overcoming the handicap which, he had shown in his report, had prevented and would prevent in the future our occupation of the field.

Some of the suggestions pertinent to the subject of opportunities and problems confronting the United States engineer in South America are as follows:

1. Obtain a modification of the Federal Reserve Board act, removing all restrictions and requirements now in it upon our banks and branches of banks engaged in foreign business.

2. Enact Federal legislation to authorize the formation of combinations of American financial interests and groups of banks in foreign countries.

3. Enact Federal legislation to enable banks to have their directors in great American industrial concerns which furnish products for international trade.

4. Urge, and if possible persuade, our manufacturers and exporters to go actively into the foreign field on the same liberal basis as to terms and credits as has so successfully been done by European countries, and establish agencies whose managers and personnel shall be Americans, expert, educated, and trained in international trade and with thorough knowledge of the language of the country occupied.

5. American financial interests with the encouragement of the Government, or at least with its approval, to assist Latin American countries, as Germany, England, and France have done in the development of these countries.

6. The Federal Government to remove all restrictions from our navigation laws in respect to oversea trade.

The report from which these few suggestions are abstracted gives all the details and the facts in extenso on which these and other suggestions are based, and, while these conclusions may, divested of their fundamental data, appear irrelevant to the subject of this report on Technical Engineering Education, they do relate closely and relevantly to the question of opportunities and problems confronting the North American and South American engineers in South America.

THE RELATIVE IMPORTANCE OF GENERAL TRAINING IN ENGINEERING BRANCHES TO EXTREME SPECIALIZATION.

By WILLIAM H. BURR,

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The profession of engineering is not a youthful one, although the rapid development of special fields of engineering activity has been at such a rate as to give the appearance of even extreme youth to the main fields of the profession as they are occupied and practiced at the present time. Indeed, this development of special fields of engineering practice has been so rapid and accompanied by such imperious demands for specialized practitioners, that the excessive haste to provide immediate educational preparation has diverted the attention of both educators and practitioners from everything but immediate practical qualifications for doing the things to be done, irrespective of the fundamental excellence or effectiveness of those qualifications. The rapid development of any line of human activity stimulates, and sometimes stimulates enormously, a feverish eagerness to accomplish an immediate material result without much thought as to ultimate economy or efficiency and with still less thought of educational influence. The special thing must be done in order to get quick financial returns without careful consideration of ultimate effects.

The scope of an engineer's professional work, however, is not confined wholly to the design and construction of machines and structures, as important as are those special operations. Before any machine, power plant, manufacturing establishment, reservoirs, and dams, or other material elements of any project are undertaken their conception as a whole must be brought forth in the imagination of their originator. No full, well-rounded conception of any project can take shape in a professional mind and be adequately expressed unless that mind is stimulated by something at least equivalent to a general educational training, supplemented by a well-developed judgment based upon experience; and a broad general professional training is the best foundation for such elements of individuality. Narrow technical attainments are certainly essential, but they are devoted to correspondingly narrow activities in the wide engineering field.

Systematic educational training in engineering began in the United States scarcely more than 80 years ago. The main physical features and topography of the country compelled the early execution of relatively large engineering works. In extending the occupation of the country westward and in the development of towns and cities with their corresponding agricultural and manufacturing interests it became necessary to build roads and railroads over mountains and across wide and deep rivers and to construct railroad lines over long distances through hilly, rough districts little adapted by nature to such purposes. The rapid development of great manufacturing establishments necessitated the accomplishment of results through the creation of power plants, stimulating the development of the steam engine in its many types and later through the production of motors of various kinds until finally the great steam engines, steam turbines, and hydroelectric plants, and much more are now installed in endless variety and with a magnitude which would have been considered inconceivable 50 years ago. All this has required the highest attainable special development in professional activity and it is not surprising that in many, and perhaps in most, quarters, the professional engineering school has been, and is, guilty of undue specialization as an accurate reflection of the extreme specialization required in construction and installation.

The professional education of engineers is a broad and fundamental thing. Undoubtedly one of its essential objects is to equip young engineers with the preparation required for the most intensely technical part of this subsequent professional work. It should not be the purpose, however, to give him such an intensely concentrated contemplation of technical things as to render him incapable of a well-balanced consideration of the fundamentals on which those technical matters must be based. There can be no railroad built, no bridge constructed, no manufacturing and putting in place of electric or other motors and the mass of affiliated mechanical appliances to form a power plant or a great manufacturing establishment without due regard to resulting economic conditions.

The financial sources from which capital is to be drawn for the consummation of such projects must carefully be considered, and the comprehensive and well-trained imagination of professional men, engineers, and others must be exercised to scrutinize, discriminate, and coordinate the effective elements into a successful engineering project. It is the business of the specialized engineer to play his part with force and efficiency in such an undertaking. In fact, he may be the main actor in such an undertaking if it is to be brought to a successful issue. He is frequently the general director of the operations which are converged to successful accomplishment, and he must possess not only the technical equipment based upon his professional education, but he must have those executive or administrative qualities required to organize, maintain, and operate large engineering undertakings. The fact that such an engineer has specialized technical qualifications does not mean that he must mainly devote his energies and capacity to the purely technical matters under his charge, for that will usually be done by subordinates; but it is imperative that he should be able to judge the qualifications and capacities of his subordinates and to control and direct their operations of design, construction, and operation.

It is the part of an engineering specialist in discharging the more important duties of his profession not only to possess the requisite technical preparation, but also to guide or control the broader elements which have to do with the fundamental conceptions of projects in relation to those parts of the community which they serve. The educational training required for the discharge of the latter responsibilities is not to be found in classroom and laboratory work, where the narrow considerations of technical subjects are the chief objects in view. They are imperative, but they require to be balanced by other training of a broader character, not necessarily more educational, but fitted to give effective views of affiliated subjects.

Again, a point of view from a position of extreme specialization fails largely in not exhibiting the coordination or affiliation of the special field to its technical environment, and thus obscures or cuts off correspondingly what should clearly be important relations. The importance of a special field of engineering work arises not only from what is accomplished in it at any time, but also from its relation to other engineering fields, to which it may be materially contributory. The most effective specialist is one who has the vision to discover the more or less remote effects of his projects or undertakings, as well as their immediate results.

Operations or developments in all engineering fields are in constant and frequently active state of flux, and every specialist ought to be so equipped as to anticipate the progress dependent upon or resulting from his professional work, and so take advantage of every favoring opportunity offered. In order to do that, his educational training should be broadly based, especially in dealing with the fundamental general principles of engineering science. Mechanical or numerical drill in extremely specialized work of the engineering school is not educational in character. It is suited only to acquire certain lines of facility in manipulation or computation which belong to his subsequent practical work and on which time assigned for true educational training should not be wasted. It is impossible to transfer successfully office and field work into the classroom or laboratory—just as impossible, indeed, as to transfer the educational work of the professional school into the engineer's office or the field. Any attempt to accomplish either of those results will entail a flat failure in both directions.

These observations constitute no criticism of the industrial schools, which have accomplished and are accomplishing results of the greatest value to the community. The benefits conveyed to their pupils are incalculable, but they occupy an entirely different field from that of professional engineering schools.

The extraordinarily rapid developments in manufacturing industries and in the construction of large public and private works during the past thirty or forty years or more have offered opportunities for the profitable employment of great numbers of young men who have not hesitated to seize such opportunities. This has created a strong demand for technical educational preparation to which abundant response has been made by the creation and vigorous growth of engineering and other technical schools in which that educational preparation has been given. It has been the purpose to instruct the greatest possible number of youth in the shortest possible time. The effectiveness with which these young men have been prepared for immediate work has from a superficial point of view justified unlimited extension of the process. True education, properly speaking, has largely been eclipsed by the overshadowing technical instruction of a vocational character. Little or nothing more advanced or extended than the four-year technical course without other preliminary training than secondary schools or high schools has been afforded nearly up to the present time, the object being to prepare graduates along intensely technical lines. This movement has caught in it practically all the older engineering schools as well as those which have been created later.

Although these fundamental ideas may not have received explicit recognition or be admitted in all educational directions, they are at least tacitly recognized and exemplified by some of the latest and most marked advances in engineering education.

Other professions, like the law and medicine, have more quickly seen and realized the defects of such a condition of things, but it is practically only at the present time that signs of a more enlarged professional view have begun to appear regarding the educational training of engineers.

At first the effort was made in some engineering curriculums to give a more general trend to educational training by introducing so-called cultural subjects or the humanities in the standard four-year course, necessarily curtailing to some extent the time required for professional subjects of study. While this undoubtedly broadened the curriculum to a material extent, the resulting course of study as a whole is little more

than an ordinary college course made up largely of technical subjects. In other words, it fails to be either a genuine college course with its broadening and cultivating influences or an effective educational training in engineering. It is an attempt to ride the proverbial two horses at once with the usual unsatisfactory, if not disastrous, result.

The present demand not only in the minds of the best engineering or other technical educators, but widespread in the technical professions, is not satisfied with such makeshift proceedings. Whenever educators meet, as in the annual functions of the Society for the Promotion of Engineering Education, or in connection with other organized bodies of a similar kind, an earnest discussion of the broadening or generalization of engineering instruction has become one of the standard features. The narrowness of the educational preparation of the present graduate and his failure to express himself effectively or to use a written style suitable to a professional man, no less than his almost slavish adherence to technical specialties in the performance of his duties, coupled with apparent inability to use or realize anything professional outside of that narrow specialty, and much more of the same character, are constant and almost universal complaints. The introduction of "engineering English" and a few other supposedly broadening topics of study are not sufficient to remedy this evil.

When practicing engineers, employers, and others criticize the present engineering graduates as lacking suitable capacity of expression and ability to use good English, they mean in most, if not all cases, that students are trained along lines fundamentally narrow and have not that broadly based educational preparation which enables young men not only to acquire the use of good English, but also that further valuable equipment of trained personality which enables them to grasp ideas or conceptions of projects and to possess the power to convey such ideas or conceptions to others. Men with such training and equipment are far more effective specialists than those whose whole educational work has been devoted to the consideration of even fundamental but special technicalities.

There has been a growing conviction, now fully ripened in some quarters, among those engaged in engineering education that this matter of specialization has been carried too far and that it has not been properly treated or formulated even in some of the best of our engineering schools. This has taken such definite shape during the past half dozen years that effective provision may now be found for the cure of this defect in a thoroughgoing way. At Columbia University all the engineering courses are now on a graduate basis. In 1914 there was installed what may be termed a three-year graduate course in engineering to be preceded by a three-year college course as the broad general foundation for the subsequent three years of technical study. The three-year college course includes sufficient mathematics and other elementary technical studies so that the subsequent three years is ample to acquire an educational preparation not less advanced and perhaps a little more so than the best four-year engineering courses heretofore given. This is entirely feasible without unnecessarily delaying the young man's entrance into active work beyond the age at which he now generally reaches it.

The actual experience of colleges shows that with reasonable attention only to preparatory work a youth may enter any college at the age of 16 or 17 years. The new graduate course will then fit him for practical service at an age not greater than 23 years. This is placing the educational training of engineers upon the same broad basis as the most advanced of the law and medical schools which require a bachelor's degree for entrance, but in which there is no specialization similar to that in engineering schools.

The Harvard-Massachusetts Institute of Technology still provides an effective four-year course of engineering study, in which, however, are found some broadly cultural

subjects, but there are also provided such subsequent years of graduate study as men who have the means and opportunity may desire to take and in which are also introduced such cultural subjects as economics, government, history, etc. Other institutions are already seriously considering corresponding developments, tending to broaden and liberalize the educational training of engineers.

The Carnegie Foundation is now making an extended investigation of the whole subject of engineering education under the general direction of Dr. C. R. Mann, who made a preliminary report at the last June meeting of the Society for the Promotion of Engineering Education. According to this preliminary report it appears to be the impression of about 4,000 employers of engineering graduates that the latter are rarely able to use correctly and forcibly the English language in expressing their ideas, no matter how important or valuable those ideas may be. Furthermore, it appears that such graduates have been given instruction in narrow specialties rather than in broad fundamental subjects. It is my own judgment after having been engaged in engineering instruction for many years that the first of these results is a legitimate consequence of the latter.

It would further appear from Dr. Mann's investigation that the majority of employers of engineering graduates are of opinion that the instruction in narrow specialties rather than in broad fundamental subjects has not produced sufficient mental training and reasoning ability, and hence that the value of such graduates to the community as a whole has been decidedly impaired. The same general criticism has been forcibly made at the recent San Francisco meeting of the American Mining Congress by Director Charles E. Willis, of the Arizona State Bureau of Mines, in a paper entitled "The need of better mining education." Speaking of the schools of mining engineering he says:

"The tendency has been to increase specialization in undergraduate courses to make specialists rather than engineers, tradesmen rather than professional men, men who are trained but not educated, and to decrease the amount of time devoted to the cultural subjects, and even to the pure sciences.

"While we have been turning to specialization, we have failed to train men for specialization in generalities.

"Years ago the industry demanded practical men. Now it demands technically educated men for nearly every line wherein there lies responsibility. The industry demands men who are fitted first as engineers, not civil, mechanical, electrical, or mining engineers, but just engineers.

"The men in practice have found that the mining graduate is more often deficient in the fundamental principles than in the minute details of his work.

"The variety of work that confronts the engineer of to-day is so great that more and more restricted specialization has been the inevitable result, and in the effort to meet this demand over-specialization has ensued.

"Again, the man with a broad education is more resourceful in his activities, borrowing and lending his knowledge of laws and his experience, and utilizing the analogies between the various departments of knowledge."

He further states that the majority of present mining graduates go into the drafting room or assay office, chiefly because the intense specialization of their educational training fits them better for such narrow fields than for positions requiring wider qualifications. He remarks what every experienced instructor and engineer knows, that no professional school "can turn out accomplished engineers," nor can they take the place of experience in actual work, but the professional schools can and should prepare young men for the widest activities of their profession by providing fundamental general technical training on which the most effective specialization may be based.

It would be easy to go further and quote the opinions of practicing engineers and experienced educators to the same effect, setting forth precisely the same line of defects in engineering graduates and attributing them to precisely the same causes, but

the two sources from which the criticisms have been drawn are the latest which have appeared, and as further citations would be simply duplication of those already given they are not necessary.

The preceding citations, it may be objected, are made at least through men engaged in educational work and hence may be colored or biased and not altogether representative. If, however, one will take the trouble to scrutinize the records of the joint meeting of the American Society of Civil Engineers, the American Society of Mechanical Engineers, the American Institute of Electrical Engineers, and the American Institute of Mining Engineers, held at the house of the Association of Engineering Societies in New York City in the early part of the current year, and the expressions which have from time to time emanated from the Institution of Civil Engineers of Great Britain regarding engineering education, precisely similar expressions will be found. The general trend of professional opinion is unqualifiedly to the effect that engineering education has been far too intensely specialized, not only in failing to include a broad educational foundation on which to build that which is technical, but also in technical courses by dwelling much too intensely upon narrow, so-called practical applications rather than acquiring a broader and more profound knowledge of fundamental principles and exercising the student in their use. This latter operation involves practical applications in the best sense of the word, but avoids excessive drill in laboratory and workshop appliances accompanied by extended and elaborate reports. This brings us back again to the radical error of attempting to substitute facility in office, shop, and field manipulations for fundamentals in the professional school.

The great specializations in the engineering profession have come to stay, for the simple reason that it is impossible for any one individual to do much more than to practice successfully in one such field. Engineering science has closely followed developments in the whole field of physical science, so that it is no longer possible for one man to acquire sufficient detailed knowledge of every branch of his profession and to extend his experience sufficiently to engage himself in more than one of the principal specialties. This, however, does not mean that the knowledge of fundamental principles in other fields may not only be useful but even imperative to the most successful special practice. The special fields of engineering practice overlap each other much and it is essentially impossible to make advances in any one of them without materially affecting one or more of the others. The great engineering practitioners have always been and are at the present day those whose mental activities are of the broadest and most comprehensive kind. They have acquired through educational training or through their own forceful initiative, or through both, a well-rounded grasp of all conditions affecting their professional operations. They are men whose intellectual activities give them vision of the broadest and deepest kind. They are not men whose conceptions are narrow and confined to intense consideration of the details of their work, but who are both capable of intense thought and broad conceptions.

Such products of the engineering school will more generally be found when, and only when, the present excessive and crude overspecialization of curriculums is displaced by much greater breadth and depth of technical training. In fact, engineering education and the engineering profession, particularly as exemplified by the special fields, would be far better off to-day if, as in the law and medical schools, there was but one main or trunk course of engineering study, followed by subsequent specialization, for general training in engineering is imperative as a foundation for the best specialization.

There is no other educational question before engineering schools at the present time of so great moment to the profession as this one of the relative importance of general training in engineering branches to extreme specialization. Those schools face grave responsibilities in this respect. Graduates are now so specialized during their

courses of study that they are profoundly ignorant of many important things in their own profession which happen to lie beyond the limit of their immediate special field and are regarded by them, consequently, as of little consequence. A professional man should not be marked even by modified ignorance in his own profession. He should be a man of broad technical information and familiar with general or fundamental principles underlying other special engineering fields than his own. He should be a member of the community with some individuality, able to set forth his own views upon any project, and to defend them and with such marks of cultivation and intelligence as may impress and persuade those about him. Whenever the profession as a whole becomes marked and prominent by breadth and effectiveness due to the well-grounded and broadly based equipment of its members it will not be necessary for the national engineering organizations of the country vigorously to agitate themselves every few months as to the best method of securing proper recognition from the public. Practitioners effectively qualified by general training in engineering branches become specialists who, by their bearing and individuality and by the excellence or quality of their professional work, impress their clients and those with whom they come in contact by their professional knowledge and capacity to use it, secure the most complete recognition, and lay the foundation for the most successful careers.

THE STUDY OF ENGINEERING EDUCATION BY THE JOINT COMMITTEE OF THE NATIONAL ENGINEERING SOCIETIES.

By C. R. MANN,

Carnegie Foundation for the Advancement of Teaching.

This study of engineering education was begun eight years ago at the 1907 meeting of the Society for the Promotion of Engineering Education. It was there voted that a committee be appointed whose duties should be "to examine into all branches of engineering education, including engineering research, graduate professional courses, undergraduate engineering instruction, the proper relations of engineering schools to secondary industrial schools, and to formulate a report or reports upon the appropriate scope of engineering education and the degree of cooperation and unity that may be advantageously arranged between various engineering schools."

During the first year of its existence this committee formulated some of the questions which it desired to consider, as follows: "What is the character of the preparation most desirable in the student about to enter the engineering course? What is the extent to which humanistic (so-called general or cultural studies) may be carried on before and in connection with the course in engineering schools? What are the proper relations between young graduates and their employers, with special reference to the responsibility of engineering schools for affording a training which makes efficient men, and of the responsibility of employers for the exercise of discretion in their dealings with graduates during the early years of employment? What faults of the average young men who graduate may be considered with a view toward recommending changes in curricula which will tend to a correction of these faults? What is the responsibility of the engineering schools toward the progress of industrial education?"

The broad scope of these questions and the far-reaching nature of the inquiry which the committee thus planned, made it appear that it would be impossible to carry the investigation to a successful conclusion without the assistance of the national engineering societies. These societies were therefore invited by the original committee to appoint members to a joint committee on engineering education. This committee was organized in 1909-10 and is composed of two delegates from each of the following

societies: The Society for the Promotion of Engineering Education, The American Society of Civil Engineers, The American Society of Mechanical Engineers, The American Institute of Electrical Engineers, The American Chemical Society, The American Institute of Mining Engineers, and The American Institute of Chemical Engineers. Mr. Desmond Fitz Gerald, representing the American Society of Civil Engineers, was chosen chairman and D. C. Jackson, representing the Society for the Promotion of Engineering Education, was made secretary. This committee began its work by collecting catalogues of engineering schools and trying to work out the way in which the time was distributed among the various subjects in the ordinary engineering curriculum. It was soon found, however, that this method led to no positive result except that of raising many questions which could only be answered by personal visits to the schools. Since no member of the committee had time to devote to this purpose and the funds of the committee were very limited, it was impossible to carry the work to a successful conclusion.

The committee then invited the Carnegie Foundation for the Advancement of Teaching to undertake this work in cooperation with them and the Foundation accepted the invitation. The work was actively begun in September, 1914, and is now fairly well under way. The questions which the committee were asked to answer can not be adequately disposed of without first coming to a general agreement and a clear definition as to what is meant by engineering education. It is evidently impossible that a few engineers or a limited number of school men can make a definition which will have sufficient scope and validity to warrant its being used as a foundation for discussion. Therefore, considerable time has been spent interviewing men who have had years of experience in engineering work and in employing the graduates of engineering schools in an effort to find out if there is any general consensus of opinion in regard to this fundamental question.

A circular letter was also addressed to all the members of the societies represented on the joint committee asking for an expression of opinion concerning the strong points and the weak points of the schools and the factors and characteristics that make for success or failure in engineering work. While the response to this letter has not been as generous as might be wished, some 1,500 replies have been received and these give a rather interesting view of the actual conditions of the schools and of the ideals toward which, in the opinion of the professional engineer, the schools should strive. The analysis of these replies shows that the professional engineers think that the schools are at present moderately successful in imparting technical knowledge, including the theoretical elements of engineering, physics, mathematics, and mechanics. The schools also are successful to a small extent in developing a scientific attitude of mind, and some power of attacking and solving problems on the part of the student.

On the other hand, the schools seem to assume a neutral position in reference to the development of such personal traits as character, self-reliance, independence, judgment, accuracy, efficiency, and industry. Some engineers consider that the schools succeed in developing these traits, and a slightly larger number consider that the schools are unsuccessful in this particular. Strong criticism of the schools is expressed in regard to their imparting a broad-minded attitude toward life in general, and in their training in powers of expression, in the application of theory to practice, in business sense, and in the understanding of men.

This summary may be resumed under the following three heads:

1. The schools are strong in imparting technical knowledge.
2. The schools are neutral in their effect upon the personal characteristics of the students.
3. The schools are weak in making the proper connections between the school and the world's work.

In contrast with this summary stands that which expresses the ideals of the profession as to what the schools should do. In this summary we find the personal traits of character, self-reliance, independence, initiative, resourcefulness, judgment, industry, at the top of the list. Interviews with engineers also make clear the fact that these characteristics are universally considered to be the most important things in determining the success or failure of a young man in the profession. Second in importance in the ideal scheme came technical knowledge and the scientific attitude of mind. Although these are much less important than the personal characteristics, they are still regarded by the engineers as more important than the practical traits, such as business sense, ability to apply theory to practice, and powers of expression.

The elements of the ideal toward which the engineers think the schools should strive may, therefore, be stated in the following order:

1. The development of character, self-reliance, independence, initiative, judgment, industry.
2. The imparting of technical knowledge and powers of scientific analysis.
3. The training in the application of theory to practice, in business sense, and in powers of expression.

A comparison of the two statements just given, concerning the actual conditions of the schools and the ideal conditions, shows that in order to work from the present condition over toward the ideal it will be necessary for the schools to do two things, namely: First, to alter their methods of instruction in such a way as to encourage the development of these personal traits of character; and second, to expand their training in such a way as to bring the student into more intimate, practical touch with the real problems of his profession and of the social world in which he lives. These, then, are the two large problems that now confront the engineering school.

It is perfectly clear in the face of problems such as these that no individual and no committee is going to be able to present a satisfactory solution. The solution can only be secured on the basis of long and careful experiments conducted by the schools in a scientific manner. In order that such experiments may be inaugurated and carried on, it is necessary that the instructors in the engineering schools understand the nature of an educational experiment and the working hypotheses of the newer educational ideal. At present it is found that very few of the members of the teaching staffs of engineering schools have had time or inclination to pay attention to the literature of education. Yet before progress can be made, a change will have to be brought about in this respect, and the production of this change constitutes one of the serious problems now facing the committee.

But even when the faculties of the schools have become somewhat familiar with the literature of education, it will be necessary, before real progress can be made, that there be discovered some more definite means of determining the educational value of changes in methods of instruction. To this end, experiments are being made under the auspices of the committee for the purpose of devising methods of testing which shall be more reliable and more objective than is the ordinary examination given by each individual instructor on the work of his own course. When such objective methods of measuring the effectiveness of a teacher's work have been discovered, it will be possible to show positively in any given school which types of instruction are most efficient. Each school will then be able to use these methods of testing, to study its own efficiency, and to work out its own salvation.

From the foregoing statement, it thus appears that the work of the joint committee is being directed toward the following three ends: First, the definition of the purpose which the engineers believe the schools should serve, together with the definition of the departures from that ideal as shown by the actual work of the schools. Second, the analysis of the teaching methods of the schools from the point of view of educational theory and practice. Third, the discovery by experiment of more objective methods of testing the educational work of the schools, together with a determination of the validity of these tests.

SESSION OF SUBSECTION 10 OF SECTION IV.¹

PAN AMERICAN UNION,
Thursday afternoon, December 30, 1915.

Chairman, ROGER W. BABSON.

The session was called to order at 2.30 o'clock by the chairman.

Papers presented:

Elementary commercial education, by F. G. Nichols.

Commercial education in secondary schools, by Paul Monroe.

Commercial education in secondary schools, by David Snedden.

Entrance requirements to colleges of commerce, by David Kinley.

Entrance requirements to colleges of commerce, by W. F. Gephart.

ELEMENTARY COMMERCIAL EDUCATION.

By FREDERICK G. NICHOLS.

Director Business Education, Department of Public Instruction, Rochester, N. Y.

NEED OF VOCATIONAL TRAINING.

According to figures given in connection with the child-welfare exhibit at the San Diego exposition, only one-eighth of all the children in the United States between the ages of 14 and 16 are in school. Annually 2,000,000 children, 14 or under, leave school and go to work without having the slightest idea where they will ultimately land. The blind alleys are choked with these boys and girls, and it is confidently believed that properly planned differentiation along commercial lines in the grammar school will contribute in a small measure, at least, to the solution of this great problem.

VOCATIONAL ASPECTS OF COMMERCIAL TRAINING.

By many authorities the vocational aspect of commercial education has been denied in the belief that its future largely depends upon its general educational character rather than upon its vocational efficiency. This attitude may be partially due to the fact that vocational education as a term first came to be applied to industrial courses. All agree, however, that the commercial courses which do not fit for positions in the business world are not fulfilling their purpose. In any consideration of an elementary commercial course it may as well be admitted by all that, while the commercial subjects are extremely valuable as a part of a general education, their highest and surest claim to a permanent place in the educational world rests upon their vocational value. If this be true it is highly important to consider what vocations of a commercial character are open to boys and girls of grammar-school age before attempting to outline a course of study that will meet their needs. If it is found upon investigation that employers are willing to take grammar-school graduates for book-

¹ There was no stenographic report of this session.

keeping or stenographic work, then subjects in preparation for this work would be included in the course of study. But if, on the other hand, the business man prefers a young man or a young woman of more maturity for such responsible positions, it does not seem worth while to emphasize bookkeeping and shorthand in an elementary course. It may be suggested that shorthand has been considered too difficult for students below the second year of high school, and when offered in that year it is usually taken by those only whose record in first-year English warrants the assumption that they will make good stenographers when they have completed their course. In most high schools shorthand is offered in the third and fourth years of the high-school course instead of in the first and second years.

The vocational needs of any community can be met only when they are thoroughly understood. In this connection it might be well to suggest that the rural school is essentially an elementary school. The great agricultural problem in education is before the American public to-day more prominently than ever before. Vocational courses are needed in such schools, and they should be planned in full recognition of the fact that farming is now looked upon as a business and that business education is quite as important to insure success in farming as in any other business occupation. Just now the greatest emphasis is being placed on important changes in agricultural methods, but it is apparent to any intelligent observer that no amount of training in better farming will of itself put the farmer on a sounder economic basis. Records showing cost of production are quite as important to the farmer as they are to the manufacturer. Household accounting will reveal otherwise hidden profits. Banking and simple business methods may well be taught in the rural elementary commercial course. It is useless to attempt much in this direction with the present farmer, but the next generation can be equipped to handle this important business exactly as efficiently as the manufacturer and merchant handle their businesses in the cities. It readily will be seen that the rural elementary commercial course will differ materially from a similar course in the city. No special facility in penmanship, business arithmetic, or typewriting should be aimed at in the former. The arrangement of the course should be modified to meet the very different requirements of the farm. Local geography, the study of great agricultural areas, of market problems, and of transportation facilities will receive greater attention in the rural course.

A SIGNIFICANT EXPERIMENT.

Recent developments in manual training afford an interesting example of failure to appreciate needs in vocational education on the part of many who have to do with the organization of new vocational courses. It is not long since that manual training was somewhat tardily introduced into the high schools of this country. Its success as a part of a general education was instantaneous, but this very success led to the belief that it should be forced downward into the elementary school and that it should be extended to include instruction in the trades. As a result, trade schools and shop schools of one kind or another sprang up all over the country. An equipment costing fabulous sums of money was bought for this work. A two-year course covering the period usually spent in the seventh and eighth grades was outlined. At the completion of this course the child was supposed to be prepared to enter upon one of the trades. But the belief is gradually spreading that a 14 or 16 year old journeyman in any trade is not wanted. The tendency at present is toward the development of more elementary, or prevocational courses, in the hope that the boy may be interested in vocational work early, but also that he may be held for the more difficult trade training until his age at graduation will not be a barrier in the way of his being absorbed into the trade for which he has been prepared. This is but one of many examples in the educational history of our country that might be offered against the present tendency which has been noted, to shove the high school commercial course downward into the elementary school.

The commercial educator of to-day has before him a very large number of successful and unsuccessful experiments in this reduction process, and, while it is not to be expected that he will make no mistakes, he can scarcely hope to be pardoned lightly if he fails to profit by the mistakes and successes of those who have been attacking similar problems in related fields of education.

OCCUPATIONS OPEN TO BOYS AND GIRLS OF GRAMMAR-SCHOOL AGE.

As it is the business of those who are responsible for the organization of elementary commercial courses to know what positions are within the contemplation of such a course it is highly important that a survey of business needs be made. Such a survey will reveal the occupations for which special training is necessary. In one community it has been found that the following positions are open to boys and girls of grammar school age: Check and cash girls, bundle clerks, shipping clerks, stock clerks, general office assistants, mailing clerks, order clerks, billing clerks, and typists. For none of these positions is training in bookkeeping and shorthand required. The bookkeeper and the stenographer must possess more maturity, judgment, etc., than can be expected of our grammar school boys and girls. Since this is true it is unnecessary to discuss the point as to whether or not these subjects can be mastered below the high school. In passing, however, it might be said that one seventh grade shorthand class in a California elementary school rolled up a total of 780 mistakes in 20 transcripts of a short letter dictated to the class for the benefit of a visiting superintendent from the East.

DIFFICULTY OF SECURING A WISE ELECTION AT SUCH AN EARLY AGE.

It is an undisputed fact that there is need of vocational education in the seventh and eighth grades of our schools, but it is a fact of equal importance that great difficulty attends any effort to help the boy and the girl choose a vocation wisely at such an early age. With all the cooperation of parent, teacher, principal, and friends a wise choice of a vocation can not always be depended upon. Therefore it is a fundamental principle in the organization of any such vocational course that the boy or girl must be permitted to elect at the beginning of the eighth grade a different line of work from what he elected at the beginning of the seventh, if the earlier choice proves to be an unwise one. It also may be emphasized that for the boy or girl who elects either a commercial or an industrial vocational course in the seventh or eighth grade, the way to a higher education in the high school and college must not be entirely closed. The cross-over from one course to another, when such courses are given at this early age, must be made easy.

A certain school principal was well within the truth when he said in substance to a group of seventh and eighth grade boys and girls: "You are now to choose the kind of life work for which you desire preparation and you will not be called upon to make a more momentous decision in your lives. Get all the information you can and choose to the best of your knowledge and understanding. While your choice is not necessarily irrevocable it is highly important that you begin your training for your life work at this point and it is to be hoped that you will not find it necessary to alter your decision later." The choice that was open to these boys and girls lay between academic, industrial, and commercial courses.

No commercial course in the elementary school that blocks the way to the high-school academic course should be tolerated. This means, of course, liberal admission requirements for the high school. On the other hand, the student should be fitted for some kind of profitable employment at the end of his elementary course, but it must not be assumed that he should be fitted for the same types of commercial work that are open to the graduates of our secondary schools. There also should be developed in him a desire for more advanced commercial education which can be obtained only by attending the high school which he should be encouraged to do when the economic conditions of the home permit.

RECENTLY ORGANIZED GRAMMAR-SCHOOL COMMERCIAL COURSES.

During the past few years there have been spasmodic attempts to introduce vocational commercial education into the grammar school. No very great success has attended these efforts, and the chief reason seems to be found in the mistaken belief that existing secondary school commercial education can be transplanted into the school of lower grade.

A new impetus has recently been given to this movement by the development of the junior high school, and the "six-six plan." Therefore a thorough discussion of this phase of commercial education is timely and the following suggestions are offered for your consideration in the belief that any contribution, however small, will be welcomed by those who are laboring with this problem the difficulty of which is only exceeded by its importance.

History of education reveals a tendency at all times to create new and lower levels in education. We are reminded that the curriculum of the early American college was in substance the curriculum of the present-day classical high school. The educator of to-day is apparently inclined to the belief that secondary education can be forced farther downward into grammar school. Algebra, Latin, German, and even geometry are taught to-day below the high school.

It is equally apparent, however, that these same educators fail to realize that changes in subject matter are made imperative by the more youthful mind of the grammar-school child. A type of algebra might well be taught as a valuable review of arithmetic and a helpful preliminary preparation for the algebra of the high school proper; a type of Latin such as has been introduced into the high school at Dorchester, Mass., might well be given consideration as an aid to the mastery of the English language; and a type of concrete geometry that would familiarize the pupil with the terminology of the subject both as a matter of general information and as a preparation for high-school geometry would not be entirely out of place. There are some business subjects, modifications of which might find a place in an elementary school commercial course, and of this particular phase of the subject more will be said later.

Commercial education, as offered in our high schools, has passed through a period of evolution. Its inception came through a widespread demand for better penmanship. Bookkeeping, business arithmetic, business English, commercial geography, shorthand, etc., have been added, until there has been developed a complete four years' course of secondary school grade. Universities are continuing the work of the commercial high school by offering courses in accounting, economics, business administration, business organization, finance, business law, etc. Now comes a demand for elementary business training and it is quite likely that in the junior high schools of this country, of which there are now nearly 400, the most important attempts are being made to meet this demand. The following example of the courses of study along commercial lines offered by these schools indicates that the oft-repeated mistakes in other departments of education are not serving any useful purpose as guideposts along the road of educational progress.

COMMERCIAL COURSE.

Seventh year.

REQUIRED SUBJECTS.		ELECTIVE SUBJECTS.	
English.....	5	Pupils may select 1 of the following:	
Arithmetic.....	3	French.....	5
Bookkeeping.....	5	German.....	5
Stenography.....	5	Spanish.....	5
Penmanship.....	3	Music and manual training.....	6
Geography, B7.....	5		
History, A7.....	5		
Physical training.....	1		

Eighth year.

REQUIRED SUBJECTS.		ELECTIVE SUBJECTS.	
English.....	5	Select 1 of the following:	
History and civics.....	5	French.....	5
Bookkeeping.....	5	German.....	5
Stenography.....	5	Spanish.....	5
Penmanship.....	2	Oral English, B8; music, A8;	
Physiology and hygiene.....	2	and manual training.....	6
Physical training.....	2		

Ninth year.

English.....	5	Select 2 of the following:	
Commercial arithmetic.....	5	French.....	5
Bookkeeping.....	5	German.....	5
Stenography.....	5	Spanish.....	5
Physical training.....	2	Music, or oral English, and man-	
		ual training.....	6
		General science.....	5
		Algebra.....	5
		Penmanship.....	5

Wherever work of this character has been attempted we find the traditional commercial subjects, such as bookkeeping, shorthand, typewriting, commercial geography, commercial arithmetic, etc. The work in these subjects has been done none too well in the high schools of the country, and therefore what can be expected from this latest educational blunder.

The following statements are quoted from a recent report on work of this character that is being done in one of the best-known junior high schools of the West, and it is typical of the attitude of the average school principal toward such work. The commercial educator will readily recognize the fallacy of the arguments presented.

"The subject of bookkeeping is offered in the seventh grade and is conducted through the three-year course. The strongest argument in favor of introducing it at this time is that the children like it and become more enthusiastic over it than do pupils of regular high school age. Many pupils of the seventh and eighth grades have not learned to get the exact meaning from a printed sentence or paragraph. They soon realize that only partial understanding of even one sentence means failure."

It will be noted that no reference whatever is made to the desirability of bookkeeping from the standpoint of the vocation for which boys and girls in these schools are being fitted. Bookkeeping in the seventh and eighth grades must rest upon a sounder foundation than is found in this statement of the case if its existence in such a course is to be justified.

Further on in the same report it is stated that eighth-grade pupils "learn the meaning and importance of leases, contracts, and deeds," and that they also learn "how real estate is transferred." The concluding sentence in the paragraph on bookkeeping states that the boy and girl are given "such training as will be of value whatever may be their position in life." This surely does not indicate that bookkeeping is considered a vocational subject; and if it is not, it is very difficult to justify it in an elementary vocational course.

The absurdity of offering shorthand to seventh-grade students is too apparent to call for argument. The report referred to above attempts to justify shorthand in the elementary commercial course in these words: "Shorthand satisfies the longing which comes to the heart of every child for a secret method. It satisfies his desire for short cuts. He acquires with great satisfaction the ability to record whole sentences with but a few strokes of his pencil. The method used is simple, being based upon syllabic

sound." The educator who wrote the report from which the above is quoted merely revealed his ignorance of the whole subject of shorthand. Nowhere in any of the reports that are available is to be found any convincing argument in favor of introducing bookkeeping and shorthand in an elementary vocational commercial course, and yet in practically all elementary schools where such a course is offered these two subjects, and others of high-school grade, without any modification of content, are to be found.

The limits of this paper will not permit a full discussion of all the subjects which might be included in an elementary commercial course, but the more important subjects may be discussed briefly to indicate their general character, and in considering the course of study presented you are asked to remember that it has been arranged in such a way that the high-school academic or commercial course remains open to the boy or girl who pursues it; that those who complete it will be fitted for definite positions in the business world; and that the course includes no subjects beyond the comprehension of the pupil of the eighth grade, or any other subjects not essential to adequate training for the positions such boys and girls can fill.

JUNIOR HIGH-SCHOOL COMMERCIAL COURSE.

Seventh year (no home work).—English, 5; business arithmetic, 5, including rapid calculation; business writing, 2½ (20 minutes daily); geography, 5 (largely place geography with commercial applications); history, 5, commercial and industrial; physical training, 2; physiology and hygiene, 1; manual training (boys), 4; household arts (girls), 4.

Eighth year (no home work).—English, 5; business arithmetic, 5, including rapid calculation; business writing, 2½ (20 minutes daily); commercial geography, 5, elementary character; civics and history, 3, for citizenship; typewriting, 5; first lessons in business, 5; manual training (boys), 4; domestic arts (girls), 4; physical training, 2.

Ninth year.—English, 5, special emphasis on the commercial side, home work; bookkeeping, 5, home work; typewriting, 5, no home work; general science, 4, home work; business writing and business arithmetic, 5, according to individual need, home work; physical training, 2; Spanish, 5, for those who do not need business writing and business arithmetic this year.

ENGLISH.

In the seventh grade no special differentiation is required in this subject. Vocabulary building, word-study, simple letter forms used in business, the more common business terms, abbreviations, spelling, punctuation, pronunciation, paragraphing effective but simple style, oral expression, and descriptive writing might be mentioned as important phases of this course. One of the principal things to be avoided is over-emphasis of written work and formal grammar as a distinct subject taught after the usual fashion. It has been estimated that 90 per cent of business English is oral.

BUSINESS ARITHMETIC.

According to the records of the New York State Education Department no commercial subject in the high schools of that State stands lower than business arithmetic in the percentage of papers accepted. This in spite of the fact that in many schools algebra is required before commercial arithmetic is begun. This situation suggests the need of more preparation in this subject before high school is reached. Merely to continue the present review of arithmetic in the eighth grade will not suffice. There must be elimination of much subject matter and more drill on what is retained. The old subjects must be presented in new dress; they must be vitalized by the constant use of material gathered from local business concerns who are always willing to cooperate. Stocks and bonds, foreign exchange, customs duties, and other

subjects whose terminology is beyond the comprehension of children should be eliminated. Time thus saved can be devoted to the drill so essential to the acquisition of facility in handling the more common arithmetical computations.

Local conditions will determine to a large extent what subjects should be eliminated and what subjects should be emphasized. Habituate most of the processes, as the material used will generally recur in the same form, and process habits must be fixed to insure the degree of facility required by the average business man. Rapid work, both mental and written, should be given daily. This seems to be the period in the child's education when unusual results can be obtained from this phase of arithmetic. It often happens that grammar-school pupils surpass their high-school competitors in this valuable work.

When the business arithmetic of the grammar school is what it should be it will be necessary to devote very little time to this subject in the high-school commercial course. It will then be possible to offer an advanced arithmetic course in the third or fourth year, when stocks and bonds, commission, customs duties, and more difficult bookkeeping arithmetic problems may be given.

BUSINESS WRITING.

There is no better time in the school life of the child to develop the habit of good writing than in the grammar school. This is also the period when habits are most easily formed. Where there are good teachers of this subject enough has been accomplished to warrant the belief that every graduate of the grammar-school commercial course should be expected to write a hand that will meet the approval of business men generally.

COMMERCIAL GEOGRAPHY.

The New York State Education Department has announced that any grammar-school student who can pass the high-school examination in commercial geography will be given credit for that subject toward graduation. To secure this recognition secondary school commercial geography courses have been introduced into the elementary schools throughout the State, but, needless to say, very few students have been able to pass the required examination. In view of this fact school authorities have demanded a modified syllabus in this subject or an easier examination. Compliance with this demand would be manifestly unfair to the high-school student and no such modification has been made. This is but one of many illustrations that might be presented which point out the futility of expecting high-school work of grammar-school boys and girls.

The elementary commercial geography course should begin with local, place geography and should be extended to cover the immediate neighborhood, the county, the State, the United States, and finally the South American countries. World geography of a commercial character may well be left to the high-school course in this subject. Important cities, rivers, and transportation routes should be studied; and in brief, a general foundation should be laid for the more difficult problem type of geography that is coming into favor in secondary schools. A better knowledge of place geography is of incalculable value to boys and girls in business positions and the lack of adequate provision for this subject has stamped the word failure on many commercial courses.

Local occupations and industries should be studied, not merely for the sake of knowing facts about them, but rather that the boys and girls may become acquainted with the business opportunities with which they are surrounded. The pupil often enough knows comparatively little about any business except that in which members of his household are engaged. Vocational opportunity and the need of special training for any worth-while occupation are to be kept uppermost in the pupil's mind.

Toward the end of the course slightly more difficult problem geography may well be introduced in the hope that there may be aroused a desire for more advanced work in this subject.

HISTORY AND CIVICS.

These subjects have a place in any course of study which for many who pursue it will be a finishing course. It is neither necessary nor desirable to make them courses in which mere facts are learned. The duties and obligations, as well as the rights of citizens, should be set forth in an interesting manner. Simple, historical material may be used to advantage in presenting the present status of an American citizen. The aim of the whole course should be to develop good citizenship. Every board of education, supported by public funds, owes it to the community to do all in its power to elevate the standard of citizenship in the community.

TYPEWRITING.

This is by no means an easy subject to teach, and yet the grammar-school student can acquire a skill that will add to his chance of securing a position when he has finished his course. Typists are always in demand for copy and billing work. The ability to write about 25 words a minute by the touch method is not too much to expect. Continued practice in the office will gradually increase this to a speed comparable with that of skilled and mature operators. This will be true, however, only when the most generally approved methods of instruction are used. One of the chief advantages of this subject in the grammar-school course is its strictly commercial nature. The pupil feels that he is getting a real business education, and this feeling may forestall an insistent demand for the more difficult subjects of bookkeeping and shorthand. It is interesting to note that the elementary commercial course which is outlined in the early part of this paper and which apparently is approved by the United States Bureau of Education does not contain this subject, although shorthand is given a place in the seventh, eighth, and ninth years. Shorthand without typewriting has relatively little commercial value.

FIRST LESSONS IN BUSINESS.

This course is not one in bookkeeping. It may begin with the study of the essential business habits and characteristics—courtesy, industry, punctuality, initiative, dependability, honesty, and many others. Concrete instruction along this line should continue throughout the course. It is not enough to give a talk occasionally on one of these topics. A conscious effort to develop these and many other business habits should permeate the entire course. It is not enough, for example, to know that courtesy is a business as well as a social asset; it is highly important that the habit of courtesy be developed, and this means continued practice. Example alone is not enough; talking on these subjects will accomplish little; repetition on the part of the pupil alone will secure the desired result.

Business men often insist that they are willing to train young people for their work if they can obtain those who are honest, courteous, ambitious, punctual, etc.

In the course which has been called "First lessons in business" the value of saving may be taught. The functions of banks and the procedure in opening a bank account may be presented. Pupils should be taught how to make change; how to keep simple financial records; how to rule forms when necessary; how to make out invoices, checks, notes, receipts, and other simple business papers; how to write complete explanations of familiar business transactions; and how to use ruled forms intelligently.

Business arithmetic, typewriting, penmanship, and first lessons in business should be related in such a way as to reveal their interdependability. Geography and English also may be taught in their proper relation to the other subjects.

An effort should be made to introduce very simple bookkeeping toward the end of this course for no other purpose than to arouse in the pupil the desire to go on into the commercial course in the high school. No single opportunity should be lost to show how all the subjects of the grammar-school commercial course might be continued with profit in the school of next higher grade. Exchange of visits between high-school and grammar-school pupils, together with interesting demonstrations, will go far toward encouraging pupils to remain in school as long as possible. Business men may be invited to come in and tell the pupils about the increasing demand for higher education in business. Negatively, it might be suggested that no particular emphasis should be placed on the job that awaits the grammar-school graduate. There will be many positions open and those who will not go on to the high school should be recommended for them in so far as their training has been adequate, but no pupil who will continue his education should be encouraged to drop out at the end of his grammar-school course by the offer of an immediate position. The business world can surely struggle along without more of such help than economic pressure will naturally turn its way.

INDUSTRIAL SUBJECTS.

Manual training for boys and domestic art for girls should be included in both years of an elementary commercial course. These subjects are in no sense vocational, but merely valuable training as a part of a general education.

PHYSICAL TRAINING.

Every boy and girl in any course of study should receive the advantage of physical training in order that the development of sound bodies may accompany their mental development. Nowhere should this kind of training be emphasized more than in a commercial course as the strain of modern business requires the highest type of physique.

ARTICULATION WITH THE HIGH SCHOOL.

Pupils who pursue the above course will be well fitted for many positions that are open to younger boys and girls, but they will also be more likely to be interested in a high-school education than they will be if no vocational work is included in their elementary course. The work of the ninth year begins where the work of the eighth year leaves off.

The English is but a continuation of that of the earlier years.

The bookkeeping continues the work given in the eighth year under the head of "First lessons in business" and can be covered in one-half the time that is usually devoted to it in the first year of the high-school course, because of the foundation that has been laid in the elementary school.

General science which, for obvious reasons, should be a part of any high-school course is offered in the ninth year.

Business writing and business arithmetic may be continued according to the individual needs of the students. Those who have perfected a good business hand in the elementary school need not continue penmanship in the high school. Those who measure up to the required standard in business arithmetic may be excused from this subject in the high school; and yet, those who need additional training in both these subjects must be given the opportunity to get it.

It needs no argument to prove that Spanish for the commercial student is the desirable foreign language in the first year of the high school. In some schools this subject is given as a part of the elementary course, but it is very doubtful if any of the work referred to as belonging to the seventh or eighth years can be replaced by foreign-language study. It is not likely that those who are satisfied with an elementary commercial training will soon be in positions where a knowledge of

Spanish will be required. On the other hand, in almost any community the high-school commercial graduate who knows the Spanish language will find a large demand for his services.

The typewriting begun in the elementary school will be perfected in the ninth year.

SUMMARY.

To summarize, it might be said that any elementary commercial course is essentially a vocational one; that it should, therefore, be planned to meet the requirements of the vocations open to those for whom the course is intended; that the grammar school graduate who knows place geography and something of the commerce of his country; who has facility and accuracy in the handling of arithmetical problems; who can write a good business hand; who can spell, punctuate, and use good business English; who has some fundamental knowledge of business methods, customs, and simple record-keeping; who has acquired business habits such as have been referred to in this paper; who can operate the typewriter with a fair degree of facility; who is fully conscious of the obligations and rights inherent in good citizenship; and who has developed a good physique and acquired a knowledge of how it may be maintained, represents the best type of boy or girl that can be offered to the business public at the end of any grammar-school course. Given a fair degree of natural ability, such a graduate may be expected to climb the ladder of success in the business world, and ripen into a valuable citizen in any community where his life may happen to be lived.

COMMERCIAL EDUCATION IN SECONDARY SCHOOLS.

By PAUL MONROE,

Director School of Education, Columbia University, New York.

I. OBSTACLES TO DEVELOPMENT OF AN ADEQUATE SYSTEM.

The two great hindrances to the development of adequate provision for commercial education in the secondary schools of the United States are, first, the general prejudice in favor of the traditional literary and cultural education, and, second, the prejudice against any differentiation of our educational organization which involves special consideration and treatment of different groups of pupils.

The former is the instinctive feeling of a people conservative in temperament, averse to trusting specialists, and interested primarily in matters other than educational. It is true that we do not often seriously consider the problem of education as functional education for the leisure of life, but it is only about a half century ago that Herbert Spencer condemned all English education on the ground that it was a preparation for the leisure of life alone. Now we consciously deal with education for leisure under the vague and fading caption of cultural education. But education for leisure has a value for an industrial age and a commercial people which has been little considered. How important this aspect of education is even for those industrially and commercially employed can be realized by raising the question whether the hours in the factory and office are more influential in shaping character, developing reliability, and other valuable social qualities, than are those spent on the street or in the saloon, or in the amusements to which the average workingman devotes his leisure. Society may be more definitely influenced, even industrially, by the activities of the leisure third of a man's time than it is by the actual conditions surrounding employment.

Consequently, our public schools, both elementary and higher, must definitely face the problem of training for leisure activities, and this not only for the sake of the individual and his enjoyment of life, but for the purpose of securing healthful or

normal conditions, more tolerable political conditions, and an atmosphere in industry and business which will lessen the grind, and stimulate the imagination to more complex motives than the economic motive can alone develop.

The supplying of elementary instruments of all higher social processes and the giving of rudimentary instruction for the leisure of life—in which individuals are primarily citizens rather than producers—is about as far as the public school can extend this function. There is little opportunity for electives now. If the present tendency for transferring the two highest grades to the secondary schools should prevail there will be even less. Although the elementary school will thus be made more nearly comparable to that of other countries, there will be no room whatever in it for studies of commercial or industrial value—the so-called prevocational subjects. However, as our topic is limited to the secondary schools, we may leave out of consideration this problem of prevocational courses.

Granting that the elementary school has its function accurately defined, the question then arises concerning the secondary school. Should the secondary course be limited to the very general curriculum of traditional character, or should it provide that educational training for commerce and industry which our modern life admits and demands? It may be replied that the many commercial schools which now exist constitute the answer. But the writer is considering the question for the very many communities that have made no such provision, not for the few which have. The answer to this question calls up the consideration of the second of the obstacles referred to in the opening statement.

In this country the only accepted division of responsibility among the various parts of the school system assigns to the elementary school the inculcation of the rudimentary arts and the general cultural training which consists chiefly of information. To the secondary school has been assigned—with few exceptions until recently—the classical procedure which is of practical value only for a few professions, but which in its relation to the leisure of life has significance for many. Naturally, such schools appealed only to a limited class, those destined for college and the professions and those for whom life had been relieved of its immediate vocational pressure. To a large extent these latter were drawn from the sex which has but recently entered in any way into vocation. The college and university performed a similar function for a smaller and yet more select class. For two generations, however, the field of higher education has offered alternatives. Professional schools and technical schools have grown up in great numbers to give youth the opportunity of direct vocational preparation for law, medicine, and engineering, parallel to the traditional academic courses of college and university. This has taken place very largely under the jurisdiction of the State university. Here the common purpose and ideas of the masses of people find most immediate reflection.

It would seem that the same arguments would call for a greater diversification of education than is now offered in the secondary field. For the explanation of the need for greater diversity we are brought face to face with a characteristic of American education, and, in fact, of American life, namely, the popular aversion to such differentiation of educational procedure as is common in European and in Latin American countries. This aversion to further differentiation in our educational system is no doubt due to fundamental democratic beliefs, the belief that not only all are created equal so far as social status is concerned, but also that this principle applies to individual abilities, social traditions, and institutional needs. In this fundamental social feeling we find an explanation for the prolongation of the elementary school course, since thereby all children are treated alike for the eight most impressionable years of their lives. Out of the same feeling also grew the high school, the college of the people, whose course was kept so general in order to offend none.

A similar feeling against special treatment of individual abilities and interests long kept the college from developing to meet the changing needs of society. Within these last few years a broader toleration of further differentiation in our educational system is in evidence. This has affected particularly the work of the secondary school and gives opportunity for a discussion of the topic of this paper as a really vital question. However, commercial education does not stand alone, as an independent problem, but is merely one part of the more general educational problem. One phase of this very general necessity for a much wider differentiation in every stage of our educational procedure is here to be considered. While a European community of 50,000 inhabitants would probably have a score of types of schools, an American community of the same size would be satisfied with three or four types at most, and these organized in a single hard-and-fast series of progression. The result frequently is that the pupil has only the alternative of going through the regular procedure or of being retarded until he loses all interest and stimulus, or of being eliminated altogether.

The very stability and social efficiency of our educational system depends upon an increasing differentiation. Until democracy can contemplate with equanimity the formation of classes based upon differences in interests and in beliefs we can not hope to approximate the perfection of organization and the efficiency of procedure found in those countries which calmly accept the fact that such classes do exist.

With the acceptance of such differentiation it appears at once that all children are not to be treated alike. Therefore, one may contend for the perfecting of a type of education, for instance, commercial education in secondary schools, without being committed to the position that it is proper for all or, further, that it should be substituted for other methods of education for other groups.

It does not even necessitate the assumption that provision for such education should eliminate definite training for the leisure interests in life, which are so important.

These two fundamental facts being established—first, that every stage of education should make some provision for the proper use of the leisure of life as well as for meeting its practical obligations, and, second, that every stage of our educational system demands very much greater differentiation, and therefore a variety of types of schools and courses of study—we are prepared to consider just what place there is and should be for commercial education in our secondary school system.

II. ACTUAL STATUS OF COMMERCIAL EDUCATION IN THE SECONDARY SCHOOLS OF THE UNITED STATES.

Speaking in economic terms, general cultural education is education considered in terms of consumption only; industrial education is concerned with the processes of production; and commercial education is the type which relates to the processes of exchange. Not only educational tradition and custom, but also economic conditions, indicate the reasons why both the specialists and the general public should not consider education in terms of consumption only. It is only within the last century or a little more that even European countries have given much attention to education as affecting production and exchange. Moreover, the change came in these countries only because economic pressure was such as to force consideration of the possible relation of education to industry and business.

In the United States and, in fact, in all America natural resources have been so great and so easily exploited without any special training that little or no attention has been given to the possibility of any educational assistance to national growth and aggrandizement. In fact, the individual, though allowed freedom and initiative, has been given little or no encouragement of educational character toward economic achievement. With a closer approximation to the marginal standards of the older countries such training becomes increasingly necessary. The vast quantities of cheap and unskilled labor available through immigration has enabled

the United States to develop machinery to take the place of technical skill, and thus for another period any attention to education for production and exchange was rendered unnecessary. The undeniable evidences that even these advantages will not enable the new world to hold its own in competition with the old has led in recent years to an interest in technical education that must be but a beginning.

But education for exchange—commercial education—has long been on a different footing. Fifty years, even 75 years, of endeavor has resulted in a system of schools—partly private, partly public—which now reaches practically every urban center. For commercial uses these schools are very inadequate to the present situation, but they at least constitute a necessary step in educational evolution. The educational bearing of the commercial situation in the new countries is very different from that of the industrial situation in older countries. Industrially, the natural resources of which any one might take advantage were at hand. Initiative, intelligence, and industry were the qualities which won. Every degree of success was obtainable. Commercially, however, the problems were much more nearly those of a fully developed and settled society. Not natural resources but men—keen, intelligent competitors for success—were the materials to be dealt with. Consequently, special training added an advantage to skill and resourcefulness, even if it did not replace them. Therefore, some form of business education has found place in American life from early in the nineteenth century.

Until recently all this training was of private character. As business was conducted with little or no governmental oversight or direction, business education depended entirely upon business desires, standards, and methods. These special schools, though rudimentary, performed a great service, as business schools still do. At the present time there are probably more than 2,000 of these schools, having an annual group of students numbering fully 200,000. This estimate is beyond the actual figures submitted by the Bureau of Education at Washington, which show an attendance of over 160,000; but the larger estimate also comes from this office.

But special schools provide for merely the routine conduct of business. Their fundamental work is bookkeeping, to which is added a very large attention to secretarial training based on typewriting and stenography. Aside from this they give some little attention to commercial law and a few other more rudimentary business subjects. These schools do not attack the real problems of business. They have no concern for the expansion of business, they afford no training for business leadership, they give no consideration to business as a social process or as a great national interest, they see nothing of its relation to foreign fields and foreign affairs. In crises like the present they have nothing to offer to enable men to take advantage of the great opportunities.

For nearly 25 years this system of private business schools has been supplemented by commercial courses in public high schools, and more recently by commercial high schools—institutions in our public-school system. Of these special institutions there are few, but including the high schools which offer special commercial courses, public commercial schools now total about 2,000 according to last year's report of the Bureau of Education. The number of students in them is slightly less than the number in the private commercial schools of various types.

There has been a rapid relative increase in the number of these public schools and the number of their students. Ten or 15 years ago it seemed that they would replace the private business schools, which were then decreasing in number and attendance. Recent business expansion, however, has so increased the demand for any kind of commercial education that the private business school seems to have taken a new lease on life, and both types are now increasing in number and popularity. The private business school has a certain advantage through the narrowness of its curriculum, its more immediate contact with direct business, and the atmosphere of business life

which it can assimilate so much better than the public school. But it is evident that the public schools must soon outrank the private, owing to the broader grasp of the problem which they can take.

III. THE PROBLEM OF PUBLIC COMMERCIAL EDUCATION OF THE SECONDARY GRADE.

Undoubtedly for the immediate future the great problem of commercial training is the organization of a secondary education that will place within the reach of practically every youth of secondary-school age in the country the opportunity for a commercial education, which shall not only prepare him for a business life but at the same time be a genuine education. The problem is wholly different from that of private business schools, and in fact wholly different from a mere preparation for the routine of business. There are many problems involved. The whole matter is to be viewed very much more broadly than the old time commercial education. It is to be considered as an educational as well as a commercial process, presenting problems for expert schoolmen as well as for expert business men. The work is not to be so intensively technical as heretofore, but much more practical. It is to include a greater variety of subjects. It is to be concerned with business from the social and the national as well as from the individual point of view.

Such public commercial schools are great educational enterprises, usually experiments as yet, having the service of well-trained teachers and of directors with a broader grasp of problems. In fact, we have already reached the situation in some of our communities where the commercial high school is sought in preference to the ordinary high school because of the better general education which it can offer. This advantage lies chiefly in the fact that while it may teach much the same group of subjects as the standard high school, they are taught with the specific object of application, which gives them greater educational value. Thus, modern languages, mechanics, commercial geography in a broader sense, economics, sociology, psychology in its application to advertising and business, can all be made to yield just as great educational values as when they are taught from the cultural point of view alone.

There are many problems which arise concerning the organization and conduct of these types of education. It is realized that up to the present much of commercial education has been experimental only. Even those problems which to the commercial educator seem to be definitely settled may to the general educator appear quite undecided. But to say the least, great advance has been made, not the least of which is the recognition of the experimental nature of the present work.

There are, first, the problems of organization and control. Is it best that commercial education should be organized as a part of the regular system of secondary schools or should it have the nature of continuation school work as it has in continental countries? The answer so far has been in favor of the former alternative. Is it better that the work should be organized in ordinary high schools, or should it be separated from other secondary work and form an independent commercial high school? The answer so far has been in favor of special courses in the regular schools. This is because of the democratic nature of our public school system and because few communities can afford the independent school, when the special courses are quite feasible. But the answer based on practical success is decidedly in favor of the specially organized school. Third, should such special schools be placed under special authority or should they be under the control of the general educational authority of the typical school board? Here again in the United States educators have not broken with tradition, and there is little tendency in the commercial field, as there is in the industrial field, to place these specialized schools under independent authorities. Yet this independent organization has given their great success to many of the best schools of Europe. No doubt if the near future is to bring great advance in the consideration of social and political aspects of commercial education, some such independent action must be taken.

Here is suggested the importance of and interest in the development of public education on the part of business organizations of private or quasi-public character. Such a departure by business organizations has not been made in this country, even in regard to higher commercial schools. Until considerable progress has been made with the higher schools it is not probable that much experimentation will take place in the secondary field, however much it is needed. Consequently the development of the immediate future will be that of the high-grade commercial high school as a part of our public school system. Such institutions are now found in all of our large communities, and in their short period of existence they have achieved an admirable record and have proved themselves a valuable development.

IV. GENERAL CONVERSION OF THE PUBLIC TO THE NEED OF COMMERCIAL EDUCATION.

Finally, the great need is for an awakening of the public to the problems of commercial as well as of industrial education. There can be no permanent progress until people as a whole realize that economic advance, general welfare, and political and national stability depend upon an adequate preparation through education for dealing with business and industrial processes. It is estimated that at present only 5 per cent of American workers are actually prepared for their duties, either in business or industry. But who shall decide what sort of education will bring preparedness? Our leading business men and business organizations must give large assistance here. The part of the educator should be merely to organize and to carry out what the business world and the general public decide upon.

In the years to come the competition between nations will undoubtedly become very much keener than it has been in the past, so that the right sort of education will become ever more and more necessary to success. Since our own advantages, through unlimited natural resources and large supplies of raw labor, are destined to become far less than in the past, the only adequate recompense for the loss of these advantages is the same careful educational procedure which has given some of the continental countries their present superior positions. There is need of a closer relation between school, business, and industry; for a broader conception of educational problems on the part of the school man; and for a very definite recognition on the part of society that education includes the preparation for production and exchange just as legitimately as it does for the consumption of values.

The nature of education in every age has been determined by the dominant social character of that age. Thus education has been religious when the dominant forces were religious; literary, when the dominant interest was in literature; militant, when the dominant power was military; so now, when men's interests are undoubtedly economic and industrial, education should respond to these needs.

It is a very partial view of the matter that would lead to the conclusion that this industrial and commercial interest is concerned merely with economic gain—that is, money making. The real essence of it is that our present industrial organization has placed within the grasp of every man those higher interests of life which have hitherto been the possession of the very limited favored few. Intelligence, culture, aesthetic appreciation, and devotion to the higher economic good of life, with an amount of leisure that will make all of these obtainable—these are now within the reach of all. Consequently, what our educational system owes to each child is first, the ability to appreciate, enjoy, and use these highest values of life, and second, an ability to contribute to the perpetuation and improvement of that organization of society which makes possible this diffusion of the good of life. In other words, modern democracy demands as a guarantee of its own well-being, of its very existence, a largely increased attention to business and industry.

COMMERCIAL EDUCATION IN SECONDARY SCHOOLS.

By DAVID SNEDDEN.

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I. There were in American public secondary schools in the school year 1912-13' 1,300,000 students; in private secondary schools 120,000 students; and in commercial schools, 160,000 students. Of the students in public high schools it is a safe estimate that one-fifth were in the so-called commercial courses or departments. At least 350,000 pupils are studying in commercial departments or courses in the schools of the United States.

These figures express quite definitely the demand for commercial education in the United States. They do not clearly measure the extent to which occupations of a commercial character finally require or absorb all those young people; but they bear eloquent testimony to the fact that parents see in these occupations desirable opportunities for their sons and daughters. Let us analyze, first, the character of the thousands of pupils taking commercial courses, and, secondly, the general character of the instruction offered.

II. For upward of half a century private and public commercial schools and departments in high schools have offered the most accessible and inexpensive opportunities available for an education of secondary grade that seemed to have a definite vocational outcome.

Hence a vast army of young people, attracted and sometimes fascinated by the alleged large possibilities of success in business careers have sought the instruction and training offered through commercial courses. Often these youths have been under economic necessity to seek employment early; often, too, they have either lost or else never developed interest in, or capacity for, the general studies of high school and college. Classes in commercial studies generally show a large percentage of students of mediocre ability, and also a considerable percentage pathetically eager to get the equipment necessary to early entrance on wage-earning employment. Into these classes have been forced or have drifted pupils not bright enough for the college preparatory work of the high school.

III. What have these pupil received? At all times the larger part of the education could be divided into two kinds: (a) A variety of definite forms of training in skill, as penmanship, typewriting, stenography, calculations, etc.; and (b) a variety of forms of instruction in organized bodies of knowledge of a commercial character, such as arithmetic, bookkeeping, commercial law, business forms, commercial geography, English composition, etc.

These forms of training and instruction were assumed to lay the foundations for the successful pursuit of some commercial occupation. At first the most practical of the studies offered was bookkeeping; later it was stenography in the large majority of schools. A variety of devices developed through which to teach specific business processes. In some cases ideals of business practice were developed under the inspiration of teachers with strong personalities.

Students finishing commercial courses with credit have often found ready access to the lower stages of business occupations, not so much because they were in all cases especially well trained, as because they had survived a partial process of selection and had become oriented toward business. In most recent years, nearly all private and many public commercial departments have equipped their students with stenography as a quite definite vocation. Probably they have greatly oversupplied the market, especially with partially equipped stenographers.

IV. Judged by any adequate standards, commercial education in the United States during the last half century has, in spite of its seeming successes, been in large measure characterized by ill-defined aims, poor organization, confused and unscientific methods, and ignorance, sometimes willful, of the general quality of its output. It has thrived on the credulity of a public deprived of opportunities for thorough and

intelligent vocational education and tempted by the allurements of modern business enterprise. It has exploited successfully a large number of devices which appeal to an uninformed public as being indicative of practical efficiency. In public schools, at least, it has often furnished a refuge for the large numbers of half competent pupil who could not meet the standards of the college preparatory work. It has often served as a mongrel general education, thus giving employment to a small army of poorly equipped teachers. Where schools have developed courses intended to be vocational rarely indeed have either admission or graduation standards been such as to insure a degree of selection and preparation.

V. The present is obviously a period of rapid transition in secondary commercial education. Partly under the influence of the general movement for vocational education during recent years, the aims and methods of commercial education are in process of becoming more clearly defined. An increasing number of educators recognize that any form of commercial education which rests largely upon abstract processes, as so often found in high schools now, must in the long run prove wasteful and ineffective. More attention is being paid to training in skill in the various divisions of commercial occupations that are being defined. Systematic comparison of various methods of teaching is being made, with a view to ascertaining which offers greatest economy and effectiveness. We shall probably witness, in the near future, a relative decline in the number of persons taking commercial courses in American schools and, relatively speaking, much higher standards imposed upon those taking such work and much greater concentration on particular processes. In other words in commercial education as in other fields a transition is taking place from a "custom and faith" basis to a scientific basis, the results of which may be expected to be far reaching. Among special developments impending are probably the following:

VI. It will be found that there are many commercial occupations which are not yet definitely analyzed, but for which, when analyzed and defined, systematic training can be given. The beginning of this movement we find now in the interest developing in the direction of training for salesmanship, for office administration, for field salesmanship, for advertising, and the like. Accompanying the resulting splitting up of the general field of commercial education we may expect many of the more general studies, such as commercial geography, commercial law, and others, to lose their place and importance, and on the other hand we may expect a very considerable accession of specific training processes.

VII. Very probably commercial education in the future will make extensive use of so-called "part-time training," by means of which, after a brief introductory period, the novice will spend part of his time in the lower stages of the commercial occupations and the remaining part in schools, seeking systematically to correlate the practical experience gained in the commercial pursuit with the technical knowledge and training which the school is able to impart. A right part-time program of education offers the solution of the problems of expense of vocational education, problems which to-day are appalling the advocates of generally developed vocational education. Furthermore, a system of part-time training extending over a series of years will make for the largest possibilities of training for directive and managerial positions, a phase of commercial training now receiving most unsatisfactory treatment.

ENTRANCE REQUIREMENTS TO COLLEGES OF COMMERCE.

By DAVID KINLEY,

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It is not many years since the undergraduate course was pretty much the same in all American colleges. In all of them Greek, Latin, and mathematics constituted the

main lines of study of all students, especially for the first two years. In junior and senior years students were expected to take a certain amount of "mental philosophy," psychology, history, natural science, and other subjects that were too dangerous, or too difficult, or too high, to be put within the reach of freshmen and sophomores. In a few cases liberalism ran riot in permitting access to the study of modern foreign languages and literature. The high-school course, or that of the private academy, took its character from that of the college. The growth of the natural sciences, and later of the social sciences, in time made it necessary not only to diversify the college curriculum, but to provide several curricula to be chosen according to the future professions of different classes of students. In a somewhat similar way the multiplication of vocations has created a demand for vocational courses that will train young men to fill them. We find, therefore, a considerable number of four-year courses listed even in the same institution, any one of which may be chosen by students according to the calling or profession which he intends later to fill. These courses bring together subjects of study which are supposed to be specifically adapted to train young aspirants for service in special callings. A similar change has taken place in the course of study of the high school. The ordinary college undergraduate course, therefore, has become in many cases a somewhat intensely specialized course. This movement is particularly noticeable in the newer western universities and colleges where the economic factor in the lives of the students has been, at least until now, more influential than other factors in determining their choice of studies. Where the economic factor has forced eastern institutions to recognize it by providing courses of study preparatory to new callings, acquiescence has largely taken the form of providing advanced or graduate courses of study, of special character, to be based upon a general undergraduate college course.

In other parts of the country the demand has been for vocational or professional courses side by side with the older general four-year college undergraduate course. This proceeding has made it necessary to consider the question of preparatory or secondary school training leading to those courses. Just as the demand from large and economically powerful classes of the people for college courses that would be specifically adapted to their needs has produced the specialized undergraduate course in engineering, commerce, and other fields, there has been in consequence a more or less insistent demand for parallel courses in the secondary schools in order to care for the interests of the great numbers who can not go farther in their education. Side by side with the pressure of this demand has been that exerted by people who think that a specialized college course should have a special kind of preparatory training. Therefore, the question of entrance requirements to these college courses, of which the college or school of commerce is the one under our consideration, has become a live issue.

For some reasons it is greatly to be wished that all young men who are ultimately to go into business might have that liberal or, as it is sometimes called, cultural, training which is the result, or supposed to be the result, of a general college course. But as I have intimated, economic pressure has hitherto made this impossible, at any rate in this country. It is impossible in any country in which successive groups of lower economic classes rise to higher economic positions and develop higher economic ambitions; for they will push to get into these superior positions by the shortest road, and so neglect any part of education which, however beneficial, is yet only incidental to their main purpose. The same argument applies *pari passu* to boys in the secondary schools who are not able to go forward to a college education, whether general or special.

In consequence, as I have said, we are in the midst of a discussion of the proper entrance requirements to college courses in commerce and other special lines. The entrance requirements to colleges and universities of this country seem to show different principles of selection according to the views of the authorities in control. We can trace, first, the influence of the party of conservatism, which insists that the entrance requirements for the old college course are sufficient for all purposes. Under the

pressure of popular demand they have indeed yielded at some points, such as insistence upon Greek, and in more cases, upon Latin. We find, in the second place, the influence of those who think they can shape up a group of secondary school subjects which have some ideal relation to the course of study which the boys are afterwards to take. Still a third party insists, having the interests of the high schools only in view, that whatever the high schools teach should be an acceptable training for any college course. They make a few concessions, such as the provision of Latin or modern foreign language for particular college courses, but as a general proposition, what the high schools provide, should, in their opinion, be adequate, whether it be in typewriting, stenography, and agriculture, or Latin, history, and English. What may be called a subparty of this group is made up of those who say that the high-school course of study should have, in other words, a local color, and meet the demands of the majority of the people of the community even though they are not going to college. They resent what is called the attempt of the colleges and universities to dictate the high-school courses; but they are acquiescent in the counter proposal that the high school courses shall dictate what the college may get.

There is a group of extremists of the last two classes who have succeeded in some communities in securing the passage of laws requiring that State-supported institutions, at any rate, must give credit for, or recognize for entrance, anything which the high schools provide.

When we consider the reasons which lead to the formation of particular high-school programs of study we are likely to find the dominant influence to be the supposed educational necessities or desires of the people of the particular community in which a high school is located. Is the town a mining town? Then the high school should have some studies that have a bearing on the industrial situation there. Is it a commercial town? Then bookkeeping, stenography, commercial law, and similar subjects should be the intellectual pabulum of the boys from 14 to 18 in the high school. Is it an agricultural community? Then every boy must study agriculture or rural sociology, or something with the adjective "rural" prefixed. The subject which has occupied the attention of the public, which is a matter of public interest for a time, must be put into the public schools, whether it be so-called temperance reform, agricultural conservation, sewing and cooking, sex hygiene, stenography, or commercial law.

Several of these principles of selection, conflicting as they are, must undoubtedly be accepted in the construction of any scheme of entrance requirements. We can not ignore accepted pedagogical principles, the conclusions of experience as to the relative values of different subjects, national and local interests, or the possibility of stimulating pupils' interest through subjects specifically preparatory to their future courses of study. Therefore the subjects of study preparatory to a college course in commerce, to be acceptable, should meet certain standards. In the first place, they must furnish what is commonly called mental training. That is to say they should develop the intellect, train the mind.

The most important thing for success in any business career, always aside, of course, from character, is intellectual ability; the power to observe, marshal, and interpret accurately facts or data concerning business matters. But mental training, this power to observe and assemble or arrange and to interpret data, may be gained through the study of any one of a considerable number of subjects.

The study of languages, properly taught, certainly gives this mental power. The study of sciences, again properly taught, also does so. The study of history, again conditioned on being well taught, also will give it.

Mathematics is also a subject which gives that mental training, keenness of observation, and ability to make fine distinctions which is called for in all relations of life, and which therefore should characterize the educated man, however imperfectly educated, from the ignorant. Other studies have special values for this purpose. Since, however, the subjects which will yield this training are numerous and can not

all be taken, at any rate by the same students, we must consider whether there is any test of exclusion which we can apply. I think there is. Some people insist that the high school commercial subjects—bookkeeping, commercial law, stenography, typewriting, and others—afford the necessary mental training and have the additional advantage of being specifically preparatory to the college course. They urge, therefore, that these subjects may properly be, at any rate, the principal part of the commercial preparatory courses. Without discussing just now the validity of these claims, it suffices to point out that the subjects in question fail to meet one important test. This is a democratic country. There are certain common notions, standards, principles, ideals, running through the woof and warp of the life of its people. These are and should be the common intellectual property of the citizens of the country. For example, they should all have proper knowledge of our form of government, its purposes, its aims, its ideals. They should all know something of the duties, responsibilities, and aims of citizenship in a country. They should know something of its history and of its language; of its present method of life. In short, they should all get in their course of study at school (and the earlier the better, and therefore for our purposes in the high school) those ideas which distinguish American life and citizenship from any other, and which are therefore the common element in the thought and life of our people. Some of the high school commercial subjects yield this training but slightly, and others, as stenography, not at all. Those which do not should be excluded unless they can come in under some principle yet to be discussed. Subjects which will accomplish this purpose and at the same time give the mental training required are history, literature, civics, economics. Therefore they are necessary subjects for a high school course of study for a prospective college commercial student, and one or more of them should be taken by him. Therefore we make place at least for history and literature.

In the next place, there is a substance of common knowledge in every community and country in classes of variously educated people that each member of that class must know if he is, so to speak, to hold his own in ordinary conversation and in the relations which he bears to the rest of his group. This is as true of business men as of others. Some of this kind of knowledge should be gotten early. The commercial studies do not meet this test. But some study of science contributes to the purpose, and therefore should be part of the intellectual equipment of every prospective business man.

Should the preparatory course for a college of commerce include the commercial subjects because they are specifically preparatory to the college course? If so, to what extent? By specifically preparatory subjects I mean subjects of the same tenor, though of lower grade, as those of the prospective college course. These are, as usually enumerated, bookkeeping, commercial arithmetic, stenography, typewriting, business law, business organization and management, and sometimes commercial geography and economic or industrial history.

These subjects have the advantage of stimulating the special interest of the commercial student in a college preparatory course. That is a matter of considerable importance. A college of commerce is one whose program of study is intended primarily to increase the student's efficiency as a breadwinner rather than as a citizen. It is vocational or professional in its aim and probably will become more strictly so in the future. Its purpose is not to prepare for clerical positions but for executive or managerial places of more or less authority and responsibility.

The high-school pupil who intends to go into business certainly has a special interest in subjects that will prepare him professionally or vocationally. He wants to get into touch with these subjects early in his career of study. We can not afford to repress this interest but must rather stimulate it. To do so we must include some commercial subjects in the high-school curriculum, and they should be those which, besides merely stimulating interest, also meet other tests of fitness. As we shall see later,

commercial geography, economic history, bookkeeping, and perhaps business law do so, and therefore on this ground should be included to some extent.

Again, of the influences operating to determine what subjects shall be accepted for entrance upon college commercial courses, the public demand for more or less vocational subjects is one of the most important. The schools belong to the people. As the groups in society to whom, one after another, the way to higher education has been opened with the spread of democracy have become more numerous, there has been an increasing demand for courses of study, collegiate and secondary, which would be especially fitted to the needs of the separate classes. This in a large measure is the reason for the ever increasing variety of college and high school courses. Now, popular demand is not always well thought out. Therefore, many subjects have been from time to time introduced whose educational value has been small, and whose popularity was ephemeral. Publicly supported institutions, like high schools and State universities, are peculiarly subject to this demand on the part of the public. Private or endowed institutions are less so, but can not in the long run escape from the influence. They too have to adapt themselves to it more or less. It is not surprising therefore that high school programs have come to include a large number of subjects which a few years ago professional educators regarded as unsuitable, and some of which experience has shown to be so; or that even now they contain some subjects of doubtful educational value. For the influence of this public demand for vocational subjects sometimes has been more powerful than has the opinion of educators on their educational value, in inducing colleges and universities to accept some quasi-vocational studies for entrance to commercial courses. Therefore, a certain amount of recognition must be given to the results of this public opinion as reflected in high school programs.

Here again we find an argument for the inclusion of some of the commercial subjects. But they should be those which meet other tests than this one. Such are book-keeping and business law. These meet more or less successfully the tests of mental training, specific preparation, general information, and popular demand.

For commercial arithmetic the argument appears to me not to be so strong. As usually taught it is but the application of the principles of arithmetic learned in the grade schools to the material of this special field. To be sure it will make the student more expert in the practice of these principles, but he learns no new principles, and the practice can merely give a certain dexterity in the manipulation of old ones. Moreover, the subject is usually carried to a degree of refinement in application which is not found in business practice, and the knowledge gained is not likely to remain with the student until he gets into business. The subject therefore has little advantage in the high school curriculum under any of the tests proposed. There has been a recent extension of the term "commercial arithmetic" to include a certain part of what is sometimes called business organization and management. In so far as this subject is covered more may be said in favor of its inclusion, but it will be better to discuss business organization and management by itself.

Business organization and management is a comparatively new subject in college and school curricula. Perhaps it most frequently is simply a study of the methods of the legal organization of corporations, partnerships and similar business groups. There is little study of the internal organization and management of important businesses. Indeed, the subject matter of this whole field, aside from the purely legal method of the creation of the business firm, is vague, not well digested, and not yet in a form suitable for teaching. Moreover, it is seldom well taught. Few high school teachers have the knowledge or business experience necessary to teach it in a profitable way. The knowledge which it imparts is of doubtful value because of the frequent changes in business methods. Therefore, until the subjects meet more completely those tests which would entitle it to be regarded as a suitable subject of study for the young mind, it is better left out. The legal part of the subject can be as well treated under business law.

Bookkeeping is a subject which, if properly taught, affords considerable mental training, gives a certain amount of useful information, and prepares the pupil for accountancy of college grade. The subject matter of bookkeeping can be used to teach analysis and synthesis, order, and accuracy, and incidentally be made a basis of inquiry into various lines of human activity. Under school teachers with a sufficiently broad view, it might even be made to a certain extent a cultural subject as well as a vocational one. Unfortunately, it is very seldom taught from this point of view, or with this aim. Nevertheless, because it meets the important tests mentioned above room must be made for it in the preparatory commercial course.

It is doubtful in my opinion whether stenography and bookkeeping meet to a sufficient extent any of the tests mentioned sufficiently well to justify their inclusion as part of the preparatory commercial course. Some teachers of these subjects insist, to be sure, that they afford a certain degree of culture and mental discipline. It may be that they do. Indeed, any subject or even physical exertion which requires study and attention makes, in a measure, for mental discipline. The only substantial argument for the inclusion of these subjects seems to me to be that there is something of a popular demand for them. In view of the fact that they seem to fail to meet all tests except a popular demand, in my judgment, they are not proper courses for credit for college entrance, although they are important incidental arts that every student in a commercial course should practice.

For the study of business law more can be said. The subject, if properly taught, is one that can be made to afford considerable mental training and to give a mass of valuable information. The subject matter of the study is susceptible of systematic presentation and discussion, and incidentally a knowledge of it assists in the study of other subjects.

The conclusion of this discussion concerning the subjects that are commonly regarded as specifically preparatory to the commercial course in college is, then, that such of these subjects as meet reasonably well the tests of furnishing mental training, giving information valuable either for citizenship or for the common life of the group to which these students will belong, of stimulating the pupils' interest and recognizing the principles of democratic control over the school courses, must be admitted to the preparatory commercial course. Of the whole group of these commercial subjects those which do meet the requirements mentioned are, as has been already remarked, bookkeeping and business law, together with commercial geography and economic history, which, however, occupy a position between the vocational and the cultural subjects.

There are some subjects which, ordinarily classed as cultural, from another point of view must be considered as in a sense vocational. Therefore they have a double importance and a double claim to inclusion in the preparatory business course. For example, proficiency in one's mother tongue is a subject which we would put first in importance for the business man who is to occupy a large field. This is to be obtained not only by the study of literature, but by constant practice, written and spoken, in familiar speech. The training should reach out not only to give acquaintance with great thoughts of great writers, but with affairs all throughout life, and look toward the acquirement of a vocabulary which will make it possible for the student both to express his spiritual and intellectual emotions and ideas, and also to convey his meaning in simple language about everyday affairs, but particularly about his business to those with whom he is dealing. The large majority of students in the United States who are going into business life in any department will stay at home and have little or nothing to do with any phase of business that would call upon them for a knowledge of any language other than their own. Therefore, it is clear that their interests demand in a high degree the fullest possible acquaintance with their mother tongue. English, therefore, is a subject whose place in the high-school program rests upon its availa-

bility as a means of general culture and also its availability as a means of special training for the business career that is to be followed later.

What shall we say of training in foreign languages? The demand of course will be for training in modern foreign languages, particularly French, German, and Spanish. For boys who are planning to go into mercantile lines which will bring them into connection with foreign houses and those doing a foreign business, argument is scarcely necessary in favor of the study of these languages. I would urge them, too, for the reason that, aside from the advantages which come from being able to do business with people of other lands in their native tongues, one is able to do business better if, knowing the language, he can get the point of view of its literature, the spirit of its people, the ideals and standards of conduct, of life and morals, that animate them. Indeed, a subject which gives such a training is a good thing for a prospective business man, even if he never has any occasion to use the language himself. He will at any rate have a basis for a more sympathetic understanding of foreign people. In some cases the language will serve in a measure as a substitute for personal acquaintance among the people who speak it. A man who is going into foreign trade should know the people from whom he is to buy and to whom he is to sell. If he can not learn them and their characteristics by living among them for a while, the next best thing is to learn them from the literature.

It remains to consider how large a proportion of the pupils' time should be given to each of the subjects in his high-school course, or at any rate, to each group. The answer, it seems to me, is not far to seek. The high schools, even in their vocational departments, should not be forced away from their original and permanent ideal, the training of young citizens as well as possible for the larger duties of life. These remarks apply with special force to those high-school pupils who are later going to the commercial course in college, for these will have opportunity later on to get all the vocational and professional knowledge and training necessary for their purpose.

But how much time relatively shall we give, then, to those various subjects? No hard and fast answer can be given. Present practice, as we shall see, allows the vocational and quasi-vocational subjects all the way from one seventh to one-fifth of the high-school program. But as long as preponderance of value is attached to the other group of subjects the actual amount of time given to the vocational studies is not of very great importance.

The argument, then, turns, in my opinion, strongly in favor of a preparatory course of study for prospective students of colleges of commerce, which is principally of a general or cultural character.

Let us turn now to the practice of some of the universities and colleges which have schools or colleges of commerce.

The University of Illinois prescribes at present for admission to its college of commerce three high-school years of English, two of mathematics, and one of science. It requires in addition either a second unit of mathematics, or one of science, or two of foreign language, according to the option of the student. It requires in addition four to five units chosen by the student from among the languages, mathematics, and science, and finally permits the student to offer three units of vocational work in bookkeeping, business law, commercial geography, and economic history, if these last two may be so classed. In other words, the student may offer a maximum of three units in vocational and partly vocational subjects, but 12 units must be from the sciences, mathematics, languages, history, economics, and other subjects of a general character.

The University of Wisconsin for admission to its course in commerce calls for two years or units of English, two of mathematics, and two of language, either Latin, or French, or German. In addition it requires eight units from a group of subjects made up of history, civics and economics, and science, including geography. It

accepts from one-half to four units in commercial work. This is a maximum of four units in vocational subjects.

At California the requirement is two units of English, two of foreign language, two of mathematics, and one each of history and science. Two additional units, however, must be taken at the option of the student from mathematics and language; while in addition will be accepted as much as three units of economics.

Abroad we find that candidates for admission to the London School of Economics must be prepared in mathematics, foreign language, history, and science. The bulk of the preparatory work for entrance at Manchester is also in these general subjects. At Antwerp, in 1913, the subjects prescribed for examination were bookkeeping, arithmetic, foreign language, history, and three of the sciences.

At Leipzig and some other places in Germany graduates of *gymnasias*, *realgymnasias*, *oberrealschulen*, and the higher commercial schools are admitted with modifications and adjustments with reference to military service and some other conditions. The subjects of study, however, which are required in Leipzig in the scholars' department, as distinguished from that of the apprentice department, are in the main the languages, mathematics, and sciences. Room is made for commercial arithmetic, the technique of commerce, and the equivalent of our business law, as well as for counting room, correspondence, and bookkeeping. Certain credit is given there for practical experience which as yet we have not admitted in this country.

The above institutions may perhaps be taken as representative. If we correlate the requirements we see that they agree in prescribing the mother tongue, mathematics, some foreign language, and, with the exception of Wisconsin, some science. These four lines of work may be regarded as the standard lines of requirement. With the possible exception of commercial geography, all the subjects prescribed for the commercial course in all the institutions mentioned are acceptable for admission to college courses other than commercial. These subjects make up 70 per cent or more of the total requirements for admission, leaving about 30 per cent to be offered from vocational or quasi-vocational subjects of study.

It would seem, therefore, that thus far the colleges have given comparatively slight recognition to such subjects as bookkeeping, stenography, typewriting, commercial law, and commercial geography for purposes of admission to college courses of commerce. Doubtless one reason for this has been the fact that in this country the teaching of these subjects has not been well done. There is not a sufficient number of well-trained teachers in these fields to justify us in accepting them for college entrance. It is otherwise in certain European countries. Antwerp, Brussels, and Paris, and very likely Buenos Aires may well be justified in attaching more importance to these lines of study for entrance upon collegiate commercial courses than we thus far have done. But it is important that we should improve the teaching in these lines and as soon as practicable give a larger recognition to them, for they are valuable not only for educational training which may be gotten out of them, but because they bring the student early to a partial point of view of his future studies and calling and imbue him more or less with the spirit and surround him more or less with the atmosphere that are to be the spirit and atmosphere of his professional career. A boy who is looking forward to a course in commerce is likely to become ambitious and lose interest in a high-school course if it is composed entirely of subjects that appear to him to have no direct relation to what he is to take up afterwards. For this reason, therefore, these subjects should have a due place in the high-school program of study.

Having regard, therefore, to all the influences which contribute to make up the high-school program—public demand from an increasing number of classes going on to higher education, the expert opinion of educators, the retarding action of the conservative opinion of the believers in the traditional college course, the necessity of stimulating or satisfying the desire of prospective commercial students by giving

them an early acquaintance with some subjects of a business character, and, finally, the necessity of choosing subjects which will give the mental discipline which is imperative in all lines of study—we may say that under prevailing American conditions a reasonable program of entrance requirements will be somewhat as follows:

English, two to three units.

Mathematics, through plane geometry, two units.

Science, one unit.

Foreign language, preferably French, Spanish, or German, two units.

History, one unit.

Commercial geography, one-half unit.

Economic history and elementary economics, one-half to one unit.

Bookkeeping, one unit.

Business law, one-half unit.

Drawing, or another vocational subject, one-half to one unit. This makes a total of from 11 to 13 units.

For the remaining units, history, languages, science, mathematics, should be accepted.

In other words, for conditions as they now prevail, the practice of the colleges and universities of this country, for commercial courses, is substantially in accord with educational opinion. Whether that opinion and the college authorities will have to yield further and accede to the demand for credit in subjects which, in the opinion of some of us, are either not fit to give the mental training we want, or if so, are not capable of testing and measurement as subjects ought to be for educational purposes, or are adapted merely to train for clerical positions, depends largely on whether or not the teachers of these subjects are able to develop them in a more systematic way, and to show that they have more substance for intellectual training than yet appears.

There is some likelihood that the amount of vocational study preparatory to college commercial courses will increase as commercial subjects of study grow. Business organization and practice, salesmanship and advertising are subjects that are going into the programs of the schools and colleges. As their subject matter becomes better standardized and teachers capable of handling the subjects appear there will unquestionably be a large demand for such subjects. The probability is therefore that the next few years will see more highly specialized high-school courses preparatory to the college commercial and other technical or semi-professional courses of study. The colleges will be bound to admit students on this basis. But there is no probability that these subjects will become the main part of the program of the high-school boy. He still will be obliged to have his mother tongue, his history, his science, and in most cases his foreign language. Even from the purely utilitarian point of view these subjects must be retained.

ENTRANCE REQUIREMENTS TO COLLEGES OF COMMERCE.

By W. F. GEPHART,

Professor of Economics, Washington University, St. Louis, Mo.

There is no other question of an educational character upon which there is less agreement—or shall we say—such a lack of any definite opinion among educators, as that which is concerned with education for business. The demand for such training has become insistent and has secured an expression in both secondary schools and higher institutions of learning with a frank admission on the part of many educators that the stage of experimentation has not yet been passed.

The origin of the demand for business training is not far to seek. The economic development of the United States has proceeded at such a rapid pace during the last quarter of a century that two important situations have arisen which give occasion for an insistence that educational institutions by a formal system of training prepare young men and women to enter business. In the first place modern business has become so complex and so highly specialized that the young man can not produce efficient returns in it by serving an apprenticeship and passing through the different parts of it, as those of an earlier generation did. The education of an earlier day did somewhat prepare a young man for business since business phenomena and conduct were relatively simple as compared with its character at present.

In the second place the rapid economic development in the United States finds us eagerly seeking foreign markets for our surplus production. Our sales abroad in the past were largely raw products, especially food products, the marketing of which was simple since they virtually sold themselves. But now that many secondary lines of production have been undertaken we find ourselves competing with older foreign trading nations without in a large way the knowledge, the machinery, or the institutions for foreign trading. The problem then is, can we adapt and create institutions, educational, financial and industrial to secure for us in a short period the results in foreign trading which have come to the older nations only after years of accumulated experience with its mistakes and successes.

The results of formal educational training for professional and technical ends have during the past years achieved such splendid results, that it is but natural to assume that equally good results can be secured from training for commercial ends. The large sums expended for medical, legal, engineering, and agricultural training have doubtless justified the expenditure. In discussing, therefore, the question of what subjects should be admitted for entrance credit to a college of commerce, the problem may be considered either from the viewpoint of attempting to assign to certain subjects in the secondary schools credit based upon the character of the content of the subject without reference to the teacher, the physical equipment of the school or its organization; or on the other hand, the entrance credit may be decided upon the basis of the particular kind of training which is to be given in a college of commerce. I confess to a preference for the latter method and it is from this viewpoint that the problem is treated.

The following lines of training in a college of commerce seems to me to be capable of differentiation even at this early experimental stage of business education:

First, training for foreign commerce.

Second, training for domestic commerce, under which division there would come the training for managerial positions in production, manufacturing, merchandising, selling, financial and transportation positions.

Third, the training for technical positions in business, such as accountants.

Fourth, the training of teachers of commercial subjects.

The first question, therefore, that a proposed college of commerce should decide is whether it is to provide training in all these lines. If this is done, then the question of entrance requirements should be decided on a very wide basis, so far as the range of possible subjects for which credit is given is concerned. The instruction has been compared with that of an engineering college with its training for electrical, civil, mechanical, and chemical engineering. But the comparison has not great validity. There are, it is true, as many equally distinct lines of business as there are lines of engineering for which different training needs to be provided, but in respect to entrance subjects the situation is vastly different. This is true largely because of the greater basic similarity in the different lines of study in engineering. That is to say, mathematics as well as English are desirable subjects for entrance for whatever line of engineering the student is to pursue. This is particularly true of mathematics. A question may properly arise, however, whether mathematics, algebra, geometry,

and commercial arithmetic may be insisted upon to the exclusion of other subjects for entrance requirement to each of the different courses of study in a college of commerce. The foreign languages arise to a very great importance for entrance credit in the case of those students who expect to enter the foreign trade, but they drop to much less importance for the student who expects to become an accountant. That is to say, it must always be a question of the relative importance of the subject in respect to the end in view. Both in secondary and higher educational institutions there are a vastly greater number of subjects of study than can be pursued by a single student, and the real value of these should be decided partly upon the basis of the end in view, partly upon how they are taught, and partly upon the content of the subject itself. To predicate value to a subject as such without respect to the one taught and his purpose, and without respect to the teacher, is to express a confidence in the formalism of modern education which its product does not seem to justify.

There is very little difference of opinion in respect to certain subjects for entrance credit. All would agree upon the study of English. The same may be said of history and science. But one soon reaches debatable ground. For example, will the student who is entering a college of commerce for training for the manufacturing business secure more mental discipline and better preparation by studying German, French, or Spanish two years, or by studying geology, chemistry, or industrial history? It should be recognized in this connection that the present enthusiasm and interest in foreign trade is likely to magnify its importance out of all proportion to the facts. However desirable it may be to prepare young men for the business of foreign commerce and whatever splendid opportunities exist for us to enter foreign markets, the chief business activity of the people of the United States for many years will be concerned with domestic business. The very large percentage of graduates of colleges of commerce will never be directly concerned with other than domestic business. The training for foreign commerce should therefore be considered a specialized kind of this specialized training for business. The subjects admitted for entrance credit should therefore differ from those accepted for the other specialized courses in a college of commerce. Then, too, the difficulties confronting those who are planning a curriculum for a college of commerce should be kept in mind in deciding upon entrance requirements. This is especially true when the character of the subject of study in such colleges is recognized.

The differences between formal training for medicine or the law and for business are very great. In the former professions as well as in many technical lines, such as engineering, there is a fairly well-defined body of knowledge which lends itself to scientific treatment and from which well-defined principles have been or can be deduced. The field of study is on the whole fairly well defined. Advances in knowledge have been made in professional and technical lines, yet the changes occurring over any short period of time are not so marked as in business for which we seek to devise formal study. There arises, therefore, the first great difficulty, namely, of finding a body of knowledge capable of scientific study on which to base a course of training for young men who expect to enter business.

It is quite true that certain lines of business activity which have been long practiced, such as banking, insurance, and a few others, have well-defined principles, but where are the large body of principles which, for example, underlies the important business activity of marketing? What are the rules to be applied in determining the character of the producing plant? It is not necessary to multiply examples of our difficulties in respect to the disorganization of our knowledge in many lines of business or to emphasize the absence of principles upon which can be organized a well-defined course of study.

But a sufficient body of well-organized facts of business and the accompanying principles are available to warrant formal training for business, and in those lines

where these are absent, an inductive study, rather than a deductive study based upon some imagined principle, will lead to fruitful results. No one, for example, can dogmatize about the best single method to market goods. What is needed is a careful analytical study of actual and potential methods with a view of arriving at results. Such a study may quite as well prepare the student for actual entrance into the business of marketing goods, as a study of well-defined rules and principles, which after all in economic activity are so subject to modifications, due to changes in time or place that little assurance can be given of their universal validity. Let us not, however, make the mistake which there is reason to believe has been and is being made in training for business, namely, that an entertaining recitation to the student and by the student of the descriptive detail of business conduct constitutes a training for business.

To summarize, then, the problem: First, colleges of commerce should recognize that they have a very definite end in view in that they are to attempt to prepare students for particular lines of business activity. Second, if they offer training in all these lines, the entrance requirements should have a large degree of elasticity in them—that is, there should be a very limited number of fixed requirements for entrance and a large number of electives, just as in a large university a certain subject for entrance has greater or less value in so far as it prepares the student to enter the medical school, the engineering school, or the law school.

Adjournment.

SESSION OF SUBSECTION 4 OF SECTION IV.

MEMORIAL CONTINENTAL HALL,

Friday morning, December 31, 1915.

Chairman, SARAH LOUISE ARNOLD.

The session was called to order at 10.30 o'clock by the chairman. Mrs. Glen Levin Swiggett, organizing secretary of the Women's Auxiliary Conference of the Second Pan American Scientific Congress, addressed the meeting relative to certain meetings to be held in the future.

Papers presented:

Well-being of children as determined by education of women, by Helen C. Putnam.

Finalidad esencial de la educación de la mujer, by Eduardo Monteverde. (Read by J. D. Fitzgerald.)

The education of women as measured in civic and social relations, by Susan M. Kingsbury.

The education of women as related to the welfare of children, by Julia Lathrop.

The education of women as measured in civic and social relations, by Sophonisba P. Breckinridge.

The CHAIRMAN. We are to be congratulated that the subsection on education of women of the congress has been invited to hold its sessions in this beautiful building. We appreciate that hospitality, and are further glad of this opportunity of meeting our sisters from the Southern Republics and sharing with them the development of women.

We are thinking of education not as something already achieved, but as something that we are beginning to understand, and exactly to-day every right-minded person in the Republic is beginning to ask anew what democracy means, and what are the opportunities of democracy. We are beginning to discuss preparedness and peace with a new meaning to either word. Further, theory and education are being challenged at every turn, and it is the part of us to ask whether the woman who has been educated makes a larger and finer contribution than the woman who has not had the advantage of a college training, which we often substitute for that larger and real term, education. The program this morning is designed to show,

therefore, as far as is consistent with the time at our disposal, what is the relation of the educated woman to the work of the world.

We will hear first, this morning, a paper by Dr. Helen Putnam, of Providence, R. I., who is well known to us all on account of her activities in the prevention of infant mortality. We will then have a paper in Spanish by Dr. Monteverde, of Montevideo, Uruguay. After that there will be a paper by Dr. Susan M. Kingsbury, of Bryn Mawr College, who will speak to us on a subject which I will announce later. Dr. Julia Lathrop, head of the Children's Bureau, will follow, and the program will be closed by a paper by Dr. Sophonisba Breckinridge, of the University of Chicago.

WELL-BEING OF CHILDREN AS DETERMINED BY EDUCATION OF WOMEN.

By HELEN C. PUTNAM,

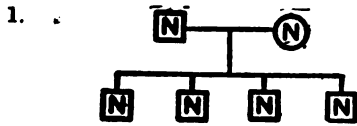
Providence, R. I.

That more than three-fourths of school children, possibly even 90 per cent, are handicapped by physical or mental or educational defects that can be or could have been prevented is repeatedly demonstrated by modern medical supervision and by other child studies. That it is not difficult to reduce the death rate of children more than two-thirds has been proved in several communities that have tried intelligently to do so. That caretakers—the mothers—can not know by instinct how to rear twentieth-century children, and are not educated to do this, has been shown to account for a large part of the statistics of preventable mortality, ill health, mental, and moral defect.

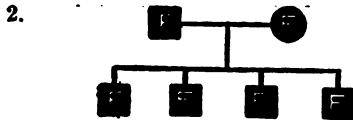
Out of this neglected field in human progress a single point is chosen for brief consideration here, with the hope that it may focus attention and so secure results. There is a law in heredity that education of women should make common knowledge; every woman needs to know it, needs to have her children know it, needs to have every other woman and her children learn in order that society may observe it. No woman willingly is the mother of a feeble-minded child. In more than half such tragedies these children need not have been created. If the woman and the man had looked into the history of her own and his own family intelligently, and if either had examined the record of the other's family intelligently, each could have foreseen the probability and could have avoided the sin. For a child has the right to be well born as well as the right to be well cared for. Where the man or woman is mentally defective to a degree of actual irresponsibility then society (i. e., all other men and women) must, in defense of the human race, protect this right of children by preventing such marriages and parenthood.

Through ignorance, irresponsibility and selfishness in the past we have at present many hundred thousand mental defectives in the United States of America. In the two Americas there are undoubtedly more than a million. A small fraction of them, of the most extreme types, are in institutions for feeble-minded, insane, criminals, and paupers. The remainder, free in communities, are conserved under public humane, sanitary and educational measures, and are multiplying at rates above the average. Several billion dollars annually are absorbed in their care and in the regulations and adjustments necessary because of these who should never have been created—wealth and effort that are needed for education, health protection and moral development of citizens with more possibilities of usefulness to humanity.

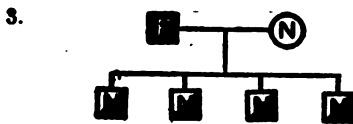
Dr. H. H. Goddard has very clearly traced the laws of inheritance of mental defect in several hundred families. His reports of these families, together with studies by several other investigators, seem to establish the following conclusions in accordance with Mendel's law of inheritance of unit characters. They will be more clearly understood and fixed in mind by referring to the accompanying diagram.



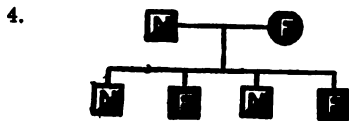
1. When both parents are normal (this including their families for at least two generations, because of reasons given below) all their children will be normal. Such people are called "duplex."



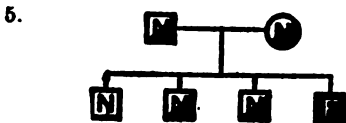
2. When both parents are feeble-minded all their children will be feeble-minded.



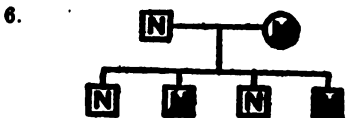
3. When one parent is feeble-minded and the other is normal (with a normal inheritance of at least two generations) all children will be apparently normal. They appear exactly like all normal people, but they are capable of having feeble-minded children according to the three following laws. Such people are called "simplex."



4. When one parent is "simplex" (appears normal, but has one feeble-minded parent) and the other feeble-minded, there are equal chances of simplex and of feeble-minded children. There is no chance of a duplex child—i. e., of a child whose children will be free from the possibility of being mentally defective.



5. When both parents are simplex there is only one chance in four of a duplex child. There is the same chance of a feeble-minded child. There are two chances in four of simplex.



6. When one parent is simplex and the other normal, which is the unfortunate marriage more likely to be contracted because the simplex appears normal, the chances of normal and of simplex are equal.

We have no way of recognizing the simplex child of a simplex-normal marriage until the feeble-minded grandchild is born, when it is too late in the case of this generation. If, however, only the normal child of such a marriage marries, and marries a normal, the grandchildren will all be normal, and mental defectiveness is thus eliminated from the family. But no normal person should marry another of simplex-normal parentage without knowing the risk of contaminating a clean inheritance. All women should understand the importance to the well-being of children of knowing direct ancestry for at least three generations.

FINALIDAD ESENCIAL DE LA EDUCACIÓN DE LA MUJER.

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Es indudable que para determinar con algún acierto el alcance y significado de la instrucción de la mujer, se debe tener fundamentalmente en vista cual es su misión principal en la vida.

Podríamos a ese efecto dividir en tres períodos la vida de una mujer: niña, joven y madre, estableciendo desde luego como un hecho, la relación de los diferentes períodos entre sí, de cada uno de ellos con el anterior y de que el tercero es el término de la evolución gradual y ascendente de los dos primeros.

Y decimos que establecemos como un hecho esas relaciones porque lo es que una niña se transforma en joven y que una joven se convierte o se debiera convertir en madre.

No consideramos necesario extendernos para demostrar este último extremo, desde que creemos que pocos lo discutirán. Diremos únicamente que la constitución fisiológica de la mujer, sus inclinaciones, reveladas desde los primeros años, su psicología moral y otras manifestaciones de diversa índole, indican claramente que su destino natural es la maternidad.

Entendemos perfectamente que habrá casos especiales en que la dirección de la vida de una mujer se manifieste, por propia vocación y con gran éxito, en otro sentido; que circunstancias extrañas a su voluntad, en otros, no le permitan satisfacer aquella aspiración insistente de su ser moral; y que en muchas ocasiones se contraría espontáneamente aquel destino; pero la verdad es que los primeros son casos excepcionales y los dos últimos constituyen precisamente una prueba de aquella afirmación.

Y si la misión esencial de la vida de una mujer ha de ser la maternidad, puede establecerse que la finalidad fundamental de la educación femenina debe ser la de preparar una madre, en el sentido más amplio y más completo de la palabra, sin perjuicio de tener en vista, en tal educación, las exigencias y circunstancias de sus estados anteriores de niña y joven.

Acceptando que el destino de la mujer es la maternidad, hay, por otra parte, motivos importantes para justificar aquella finalidad y ellos son los que se derivan de la influencia poderosa de que podría disponer la mujer, como madre, en la solución de problemas fundamentales para el bienestar social y colectivo.

Entre estos últimos se destaca, por ejemplo, el más esencial y que es de permanente actualidad, el problema del joven, es decir, la mejor manera de conseguir que nuestros jóvenes sean hombres, en el sentido moral, intelectual y físico.

No es esta la ocasión de hacer un estudio de la juventud sudamericana, pero está en la conciencia de todos que de su constitución moral y física, dependerá en gran parte, el porvenir de estos países.

Ahora bien; el hogar debiera ser la gran escuela de la salud moral y física de un joven, puesto que no hay nada en el mundo que tenga que ver más directamente con el ser humano.

En él, todos hemos experimentado las más dulces e intensas sensaciones de nuestra vida; en su interior las almas se revelan como son realmente con todos sus defectos y con todas sus virtudes. No debiera existir influencia humana superior a la del hogar en el destino de nuestras vidas.

Si el purísimo sentimiento de amor que generalmente inspira la fundación de un hogar, durara en el mismo, si cada uno de los elementos que lo constituyen pudiera libremente llevar a la práctica las inspiraciones reflexivas y sanas de un espíritu educacional elevado, si en el ambiente íntimo del hogar flotara más que el deseo utilitario, el suave perfume del deber y de la virtud, si la sin par ternura de la madre y los afanes y sacrificios del padre, encontraran siempre eco simpático en el

alma de los hijos, si fuera posible mantener siempre vivo el vínculo de afecto y de autoridad de los padres sobre los hijos, no hay duda ninguna que la influencia del hogar sería decisiva en la formación del carácter de estos últimos.

Y es evidente que el alma del hogar debiera ser la madre. Fisiológica y moralmente no hay identificación superior y más completa que la de una madre con su hijo. Una madre siente a la distancia, sin haberlo oído, que su hijo clama por el alimento fortificante que su propio cuerpo ha de suministrarle; una madre sin conocer medicina, adivina que su hijo querido está enfermo y ella es la que acalla con un beso sus primeros lamentos. Una madre vive para su hijo, y nada la une al mundo más fuertemente que el lazo maternal. Y para un niño no hay nada más atrayente que la madre; la primera palabra completa que balbucearon sus labios fué la dulce y amorosa palabra que designa a la que nos dió el ser. Para ella fué la primera sonrisa y a ella clamó al primer deseo y el primer dolor.

Y el niño cuando se convierte en joven, continúa sintiendo que a la madre lo ligan lazos más estrechos que cualesquiera otros; continúa sabiendo que en ella está el grado máximo de amor para él, y acude a su regazo protector cuando los dolores físicos o las angustias morales, afligen su cuerpo o torturan su alma.

Y ese ser es el que le inspira mayor confianza y es el que con su amor, unido a su capacidad, dispondría del arma más formidable para dominarlo, para trazarle el rumbo de la vida, para moldear su personalidad y darle la dirección práctica necesaria para hacer de él un hombre.

Preparad madres patriotas que sean capaces de inculcar en sus hijos los principios del deber y del derecho y contribuiréis en el más alto grado a la formación del alma nacional.

Formad buenas madres y tendréis buenos ciudadanos.

Y si tan grande y tan decisiva puede llegar a ser la influencia de la madre en la formación del carácter de sus hijos, bien puede afirmarse que también bajo ese punto de vista, el fin principal de la educación de la mujer debe ser el de prepararla para ser una buena madre.

Y para prepararla para ser una verdadera madre, es necesario ponerla previamente en condiciones de ser una verdadera señorita.

¿Conducen actualmente a esos fines los sistemas y métodos de educación femenina en todos los países sudamericanos?

Nos permitimos creer que, al menos en algunos, es sólo aparente tal objetivo.

Toda la finalidad de dicha educación en tales países parece responder al propósito exclusivo de hacerla una mujer de instrucción general, preparada para algunos quehaceres domésticos y para una actuación más o menos distinguida en el mundo social.

No se insiste bastante sobre la educación de su carácter, la entidad moral de su personalidad; no se pone interés especial en el desarrollo de sus energías y de su individualismo; no se le hacen conocer de cerca los problemas sociales; no se la prepara para influir en la solución de tales problemas. Se la reduce a una función puramente pasiva en las grandes luchas de la vida. Y en el mejor de los casos, sólo se atiende a las cuestiones y conocimientos que han de relacionarse únicamente con su porvenir personal, olvidándose que ella ha de ser más tarde un centro regulador de la vida y porvenir de otros.

Como consecuencia de tal sistema ocurre que una joven que abandona la escuela, generalmente no tiene con la sociedad en que vive otras relaciones que las de carácter social.

Si es de la clase humilde, trabaja por lo común en una ocupación material, sin otras perspectivas que un matrimonio en que agregará a las fatigas de una labor, algunas veces penosa, de su vida de soltera, las responsabilidades de un hogar, en ocasiones, angustiado por dificultades económicas o por defectos graves de un compañero vicioso.

Si es de la clase media, y no está obligada a dar su contribución al sostén de su hogar, vivirá una vida mas o menos inútil, sin aportar a la sociedad de que forma parte, otro concurso que el de su presencia a las fiestas o espectáculos públicos, propios de su esfera social.

Si pertenece a la llamada clase alta, distribuirá su tiempo en visitar modistas, pasear en automóvil, asistir a las grandes reuniones sociales, a las playas aristocráticas y, salvo casos excepcionales, sólo aportará a la comunidad de que es parte integrante, el concurso de su distinción, de sus trajes costosos, y en algunas ocasiones, el de su educación artística.

Y todas vivirán una vida extraña a la realidad, en cuanto se refiere a un conocimiento exacto de la comunidad de que forman parte, de muchos de los componentes de la misma y de varios de los problemas que afectan su bienestar.

Y todas estarán expuestas, particularmente las de las dos últimas categorías, a crearse a sí mismas, una naturaleza superficial, debido a que sus aspiraciones se hacen sentir únicamente en el círculo limitado de los asuntos de que habla la crónica social del periódico y no se extienden a los mas fundamentales que existen en toda sociedad organizada.

Comprendemos perfectamente que la mujer de la primera categoría no pueda por las circunstancias especiales de su posición, que la obligan a emplear su tiempo en el trabajo material, rendir a la comunidad otro servicio que el que ya le presta con sus propias tareas habituales, pero no justificamos que las de la segunda y tercera no dediquen parte de su tiempo disponible a dar a la sociedad en que viven, la contribución de sus conocimientos, de su altruismo, y de ese adorable poder que en grado superior, tiene generalmente la mujer.

Pero no es esto lo más grave. Los resultados de esas características se van a sentir después. Actuando las jóvenes en una esfera limitada, casi exclusivamente, por asuntos femeninos, sin otra relación con los hombres en general, que las puramente de carácter social, que tienen mucho de artificial, continúa así hasta el momento en que contrae matrimonio y entonces asume la responsabilidad de su hogar, pero de una manera deficiente e incompleta, porque no está preparada para ello, y porque luego empezará, a costa de crueles dolores y desengaños, a adquirir los conocimientos y la experiencia, que en parte al menos, debía haber adquirido antes.

Y en esa condición resulta que una esposa, modelo de tal, en el sentido moral de la palabra, como lo son casi sin excepción las mujeres sudamericanas, no interviene en muchos actos de la vida del marido, porque no son de su conocimiento y porque mutuamente entienden los dos que es ello perfectamente natural.

Y tampoco puede aconsejar a su hijo, que ha pasado la adolescencia, conducta y procedimientos en la mayor parte de sus asuntos, porque éste le dice, con cierto fundamento, que ella no entiende de tales cosas. Ella, que debiera estar más identificada con el hombre en el sentido de conocer sus defectos, sus virtudes, sus luchas, sus dificultades y sus aspiraciones; ella, que ha de vivir con él, que ha de sufrir en primer término las consecuencias de su carácter, y de sus actos; ella, que ha de dirigirlo cuando sea su madre, no conoce de cerca su vida ni comprende su psicología.

¡Cuántas lágrimas vertidas por una esposa ejemplar, cuántas armaduras sufridas por una madre amorosa, cuántos contrastes morales y económicos, se ahorrarían en la vida de un hogar, si la esposa estuviera habilitada para prevenir las caídas del esposo y si la madre lo estuviera para contrariar con autoridad las tendencias, a menudo peligrosas e inexpertas de la juventud! ¡Cuántas enfermedades de un niño o de un joven se evitarían, si la madre antes de ser esposa, y antes de ser madre, para entregar su corazón a un hombre, hubiese exigido como una de las primeras condiciones, el dársele a un hombre sano físicamente, en el sentido más exigente de la palabra, y hubiese sido ella misma una mujer sana y fuerte, y con los conocimientos necesarios para saber dirigir la educación física de sus hijos.

A este respecto, sienta la necesidad de decir que un aspecto bastante descuidado de la educación femenina es el de la educación física, de proyecciones tan importantes en la vida de un hogar.

No nos referimos únicamente a la llamada gimnasia de las escuelas. Empleamos el término de educación física en su significación moderna que puede condensarse en estas tres palabras: salud, recreación y fuerza. El porvenir de la familia nacional en cuanto a su salud, energía y acción eficiente, depende de que sus componentes sean sanos, y en primer término, de que lo sean las madres.

¡Cuántos casos de esterilidad, por otra parte, se observan en la mujer, que no ocurrirían si ella, en la época de su juventud, hubiera vivido la vida del ejercicio metódico y científico, que tiende al mejor funcionamiento de los órganos, al desarrollo armónico muscular y al perfeccionamiento de la constitución en general!

¡Cuánta superficialidad inútil y perjudicial, cuánto tiempo perdido en distracciones, no siempre legítimas, se evitarían, si las mujeres se dedicaran en sus horas libres a los deportes sanos y alegres al aire libre!

Yo no pienso que la mujer debe despojarse de las características que constituyen los encantos esenciales de su sexo, y tampoco prestigio el ideal de la mujer hombre. Si a eso desgraciadamente se llegara, la vida humana perdería el 50 por ciento de sus atractivos más dulces y legítimos.

Quitad a la mujer los sentimientos exquisitos de su ternura, la dulce confianza en la protección del varón, las múltiples y delicadas fases de su personalidad femenina, la suavidad atrayente de sus modales, la gracia encantadora de sus movimientos y habréis deformado la más hermosa obra de la creación al mismo tiempo que neutralizado la mayor influencia moderadora de los instintos, a menudo brutales, del varón. Pero, dejándole todo esto, dadle también la conciencia clara de su misión y de su poder, los elementos necesarios para cumplir aquella y ejercer éste, y habréis realizado una de las obras más importantes en favor de la moralidad, del bienestar y de la grandeza de los pueblos sudamericanos.

En armonía con las consideraciones precedentes y como conclusiones de las mismas, creo que dentro de los programas de las escuelas para el sexo femenino y en los dos últimos años del curso, debieran considerarse como esenciales, y por consiguiente incluirse o ampliarse, las asignaturas y estudios siguientes:

Anatomía y fisiología humanas.—Higiene sexual, sencillas nociones de maternidad, con relación al cuidado de niños de pecho.

Higiene.—Aplicada a la primera infancia, a la niñez, a la adolescencia y a la juventud.

Educación física.—Calistenia, aparatos, juegos recreativos, deportes en general, baños

Psicología.—Conocimiento de las facultades intelectuales y de la sensibilidad con el fin de vigorizarlas por medio de la actividad.

Medio ambiente.—Estudio y conocimiento de sus características en el sentido moral, social y físico.

Química.—Nociones relacionadas con la alimentación y temperamentos.

Economía doméstica.—En cuanto se relaciona con la limpieza y amenización del hogar, corte y confección de trajes, lavado y planchado, administración de ingresos.

Educación cívica.—Nociones principales de educación cívica, biografía de los grandes servidores, en el sentido más amplio de la palabra, del país.

Religión.—Idea exacta de la religión en general y del cristianismo en particular, con prescindencia de sectas. La vida espiritual y su desarrollo.

Problemas sociales.—El alcoholismo, la tuberculosis, los delincuentes, huérfanos, mendicidad, enfermedades contagiosas.

Problemas morales.—El juego de azar, la impureza, la prostitución, el matrimonio, los hijos.

THE EDUCATION OF WOMEN AS MEASURED IN CIVIC AND SOCIAL RELATIONS.

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The extent and scope of civic responsibility has greatly extended in the past decade, marking the evolution of a new, conscious ideal. All responsibility for social amelioration and social advancement is fast coming to be civic. It follows therefore that a discussion of the education of women to meet the demands of the social group perforce dwells upon the preparation of woman for civic relations. Formerly the relation of women to so-called social service was that of men to government. It was largely unorganized, it was not even the product of leisure, it was the by-product of leisure. It was a religious expression and it functioned through the church in the care of the sick, the relief of the poor, and the protection of widows and orphans. When the home failed in its responsibilities, the church rescued the individual of misfortune.

But the passing of time has brought complexities of living, and the amoebic community with its home, its school, its church, and its town hall, has become a highly developed organism. All of the functions of the individual home continue, but each has numerous interdependent relations. The home is still responsible for cleanliness and purity, but it can not individually control the sewage of the city nor the disposal of garbage; it must provide itself with clean water, pure milk, and wholesome food, but it can not see that the city reservoir is clean, the dairy sanitary, and the beef undiseased. Similarly the individual may no longer determine his housing environment, he must accept what he finds within the range of his income. The child no longer has the freedom of broad fields, wide streets, and spacious school yards; he must trim his energy to the angles of his courtyard and the parallels of the sidewalk. The schoolboy formerly merged into the apprentice, the apprentice into the journeyman, the journeyman slowly grew to be the master workman. Education commenced in the home, it continued through the school and the home and the shop, on and on, to years of maturity before it was considered finished. To-day the school closes at 2 or 3 o'clock of the day and at 12 or 14 years of the age. The sick can not be nursed by the kind neighbor, for blocks, even miles of cobblestones and street-car tracks and high buildings separate the one from the other; the poor can no longer be fed and clothed by the Good Samaritan, for he is not passing that way; the widow and the orphan may not now be cared for by the man in the big house, for the widows and orphans are too numerous and the big houses are also too numerous.

All of these duties now devolve upon the community at large. Whenever the group realizes its responsibility as a group, those obligations are assumed by the state. That is, whenever the conscience of a sufficiently large group has become socialized with respect to any problem, that problem is solved by legislative action and cared for by the representatives of the State.

The State, thus, must lay down sewers and arrange for the disposal of garbage; it must guarantee the water supply, regulate the distribution of milk, and enforce pure food laws; it must create housing commissions and enforce proper opportunities for living; it must organize playgrounds and country day schools; it must substitute for apprenticeships and the journeyman stage prevocational training, trade schools, continuation schools for minors and trade evening classes and dull season courses for adults; it must establish hospitals for the sick, the insane, the deficient, and care for the poor and the aged, the widow and the orphan, the handicapped and the weakling.

Social welfare and government are coming together, politics are being socialized, and with the merger the woman whose pastime it was to administer the charities of the village, is assuming, must assume together with men, the social responsibilities of the

state, Unless the woman is to give over her pristine interests, both in relation to her own house and in relation to the home questions of her less fortunate neighbor, she must be prepared to accept this new condition as one of responsibility, of duty, and social work, so called, must no longer be the by-product of leisure. And her responsibility is to be direct, that of a citizen, that of an elector, that of an office holder.

Some weeks ago I was rudely awakened. It has been the good old custom to present instruction to women in political questions as of great importance, historically, culturally, for the sake of developing powers of thought, even that women may safely guide male voters. But, in reply to a query concerning the value to my students of certain discussions on economic questions, I received the reply from 10 per cent of the class, that the considerations were of significance as they "would be called upon to vote upon return to their home State."

The problems of women's education as measured in civic relations in more than one-third of our States and about 9 per cent of our population are to-day identical with those of men's education, except that doubtless the responsibility for social phases of civic questions will naturally devolve upon women, and consequently preparation of women for civic duties may properly follow social lines.

But we have not as yet attained the Utopian state and we know that a very large proportion of social welfare is carried on by free, quasi-public institutions and organizations, dependent on endowment and contributory support; and by partly-free institutions, partly endowed, and partly requiring payment for services rendered. This will continue indefinitely, for no sooner has the state comprehended one new responsibility than the group searches for higher ideals, attains new standards and imposes on itself, through the State, new obligations.

The work which women should be prepared to meet, therefore, is of varied types. It may be subdivided into two main classes: That which is incumbent upon all women, that of the citizen, the elector, the unit in society, and that which is incumbent upon those who are willing to assume professional responsibilities—who wish to become the social physician or the social educator—who would bind up the wounds of society, who would become the teacher of child, of adult, of home, who would serve to lead in social programs. These women may be the employees of the state, of social institutions or organizations, or they may be the administrators of state institutions or of public or of quasi-public institutions.

Education, therefore, faces the two problems: (1) The preparation of all women for civic comprehension and electoral obligations, especially as applied to general education, social relations and social economic systems, (2) the preparation of a group of women who shall become administrators of social organizations and leaders of social movements, or who shall carry on social instruction, social regeneration, or social relief. The first problem is universal. It is the preparation of the girl as well as the boy for civic life. It requires first that the State shall recognize the time and place where instruction should be given. When the State permits the child to withdraw from its regular schooling at 12 or 14 or 16 years of age, it should provide elementary instruction in civics previous to that period. And instruction in civics should not alone include descriptions of constitutions, legislatures, courts. Most of our texts to-day give very large attention to the theory of government but fail to portray the functions of the State which pertain to the everyday life of the individual and of the home. Instruction in civics should tell the child how she may know where her water supply comes from and whether the milk supply is clean and the groceries are pure. It should teach the child that it will be her duty to see that laws are passed and laws are enforced which shall assure health and comfort to her and her family. It should picture the activities of the city health department, it should explain the pure food laws, the existence and the significance of public playgrounds, of public baths, of social centers, of hospitals, of clinics, of milk stations. It should describe the aid which the child and the man may have from tenement

house commissions, workmen's compensation boards, boards of labor and industry, agencies for social insurance. It is not sufficient to presume that civics will be taught in the high schools. Eighty per cent of the children will not enter the high school. In the elementary schools should be placed instruction in the elements of social politics and social civics, and if in certain districts children are likely to enter high schools such instruction may be postponed, but it should not be omitted from secondary instruction or from college courses.

The social center and the civic center movements have proved that not only children but adults may be taught, and may be given opportunity for proper expression of social instincts. With the advance of moving pictures, reflectoscopes, and other means of visualization, with the growth of the science of advertising, with the study of social psychology, and effective means of propagandism, the State may continue the education of the child, through the years from school to voters' booth, through the years of youth to manhood and womanhood, in fact throughout life, disseminating ever among the masses the social standards which idealists have succeeded in embodying in law, so that in turn the masses may advance those standards and require of the State ever higher ideals.

The preparation of women for professional participation in social-civic affairs is a distinctly different question, and a new one. We may grant for the moment the thesis that every woman should be educated for self-support, as well as drilled in the elements of household science and of civics. But we turn now to consideration of two distinct groups of women, one which does not face the immediate necessity for self-maintenance and one which looks forward to professional activity in social economics. The former are in this country daily clamoring for opportunities of self-expression. They perform their duties of home and society as society, the public, has standardized them. But they are not busy, they are not happy. They demand a larger arena for the powers their inheritance and their education have given them. Their brothers become masters of finance, they demand the right to become more than mistresses of bridge whist and the gaming table.

They have a right to a larger activity. They have no right to idleness. There may be an inalienable right to property—of that I am not certain. But of this I am convinced: There is no inalienable right to leisure. These women should be prepared to make large and ever larger contribution to the cultural, social, political advancement of the community. They should choose just as carefully, just as sincerely, just as efficiently, what is to be their professional interest and pursuit as their sisters who expect to enter gainful occupations. It may be music, it may be literature, it may be any one of the arts, it may be hygiene, it may be household economy, it may be geology, it may be psychology, it may be any one of the exact sciences, or it may be social economy. They, like all mankind, may have an avocation, a hobby, but they, like all the rest of mankind, should have a vocation.

Let us consider therefore this group which looks forward to professional activity in the social aspect of civic affairs—so-called social work. What differences should exist between preparation or standards for those who do not look forward to self-maintenance and those who anticipate the necessity of regular income? None, whatever. But the response comes at once that the services of the one may be unpaid, of the other paid. What of it? If each is rendering a service, should she not be equipped to do so? Would the public to-day permit a physician to practice without due certification because he happened to own a thousand shares of Pennsylvania Railway stock? Or would a board of education employ an untrained teacher because she was a large property holder? Why then should the social physician or the social teacher be intrusted with responsibilities without due training and experience?

The most difficult practical comeback to such a proposition is whether the "volunteer" worker will not then necessarily be paid and if she is paid to what extent it will affect the salaries and remuneration of those who need the income. This is a long

mooted question. My belief is this: If social service is a civic or quasi-civic activity, the same principle should maintain in the compensation of the employee as in all other civic and political service. Whatever system will secure for the position the best service should be adopted. It is a question of political theory. Such a principle once established should be maintained, exactly as decision with regard to payment of other civic employees and incumbents of other civic positions of importance.

It will also at once be argued that a vast service of administration now comes to the State from people not specifically trained. True; but two considerations demand recognition which involve a differentiation of administrative from executive duties. First, a schooling of experience in specific or allied or preparative lines is frequently as valuable, if not more valuable, than routine training. Thus organization experience, knowledge of finance, power to decipher cause and effect, are all highly contributory in the administration of large educational, remedial, or corrective institutions, such as schools, hospitals, prisons, reformatories. Other qualities are essential in the direction of institutions devoted to research, while still others are needed in the management of smaller intimate organizations, such as settlements, playgrounds, homes. And the same principles of vocational guidance should be applied in selection of those who are to serve in the capacities of administration as in the executive, teaching or investigating positions.

Second, the day has arrived when training for all types of public service is being demanded. The new generation will find itself called upon to prove its fitness for its occupation, whether public or private, whether volunteer or paid. The adoption of the principle that utilization of volunteer service shall depend upon the best effects to the work in hand will result in the establishment of standards of efficiency, and consequent standards of preparation.

The mooted question of whether social work is at present a profession depends upon the attitude of the public and of the individual. If a community requires the workers to attain specified standards and the work to be of specified grade, in that community social economy is a profession. If an individual attains specific standards of preparation and maintains specific standards of accomplishment, that individual is a professional social economist. But who shall set the standard? At present each private organization, often in each community, establishes its own standards or moves apace regardless of standards. But the adoption of so-called philanthropic activities by the State, the inclusion of social education in the responsibilities of the school system, the socializing of State reformatories, prisons, hospitals, and asylums, in fact the merging of social and civic efforts will necessitate standardization. And in this generation when social reform adopts the speed of twentieth century locomotion, we may expect the time to be not far distant when it will be as necessary for the social physician and the social teacher and the social reformer to attain professional standards as it now is for the doctor or the teacher or the preacher.

Social economy in its varied phases has a history; underlying each phase if not all phases is a specific social theory; most types have adopted established methods and many have developed a technique. Underlying each separate effort for social betterment and back of the whole conscious struggle is a philosophy. Much of the history is yet to be written, much of the theory is yet to be formulated, most methods and most techniques are in the making, and the philosophy is yet to be expounded. The result is that teaching of social economy is, to say the least, difficult. To be thorough, to have depth, it must necessarily follow research methods, for there is as yet little adequate literature, experience is not recorded, or is scattered so far and wide as to be difficult of access, collections of sources are ephemeral pamphlets, the joy of the student, the bane of the librarian.

But there is, to my mind, a fundamental line of preparation. The range of social service is so wide, the diversity of social programs is so great that some selection of type for even elementary training seems necessary. However, I maintain that any

student looking forward to social work, volunteer or paid, should have studied or should study the principles of economics, of politics, of psychology, and of biology, and should have gained a knowledge of history and of literature—that is, should be familiar with the activities and ideals of man through the ages as recorded in history and revealed in literature. To be thoroughly equipped to lead, to teach, to relieve, to correct individuals or groups of individuals, youths or adults, I believe such fundamental training should be followed by studies in social institutions, social problems, social legislation, social education, and social measurements.

And the preparation will not be complete without specialization in one or the other types of efforts for the promotion of social welfare or social research, requiring intensive study of the history, theory, methods, technique, and philosophy of the type desired.

Such a program sets a high standard. But why not? We have come to a full realization that our public school teachers of elementary, of secondary, of college rank should be equipped, each for his grade or type of work. Why not for the social educator? All social welfare endeavor is to-day an effort to educate the individual, the family, the group, to wider knowledge, to higher ideals, to better standards. And the social worker is a teacher. She must be trained as a teacher for whatever type of work, for whatever grade of duty she is to enter.

The method by which such training shall be given is not our present consideration. We are here attempting only to maintain that standards of work and standards of worker should be set in the newer and more universal field of education, and that it is the responsibility of the State that such education should be efficiently conducted, and that workers (teachers) should be adequately prepared for their service.

The motive of private effort should be so to develop the civic consciousness that the State shall speedily accept the new ideal and assume the new responsibility for social education. Therefore in any new, as in all old, settlements or countries it is important to crystallize the conception that with new complex industrial activity, whether rural or urban, will come necessity for wider and larger social responsibility and a more extended form of education. And this responsibility will quickly be transformed from a private to a public obligation, from a social to a civic duty.

That State, whether new or old, sparsely or densely settled, urban or rural in character, will therefore do well which takes account of stock, discovers where in the evolution of industrial life it now stands, what are its assets and what its obligations, in order to retain a solvent status both for the present and for the future. In such an accounting, the most important items should be the education of its men and women for social-civic activities as well as for other political duties, first by providing that preparation which pertains to the current function of the citizen, second that which is essential for the best professional service.

EDUCATION OF WOMEN AS RELATED TO THE WELFARE OF CHILDREN.

By JULIA C. LATHROP,

Chief of Children's Bureau, Washington, D. C.

I have been asked to speak on the "Education of women as related to the welfare of children." May I attempt to trace briefly some of the tendencies leading to such education and to indicate its present condition in the United States and its probable development?

A MOTHER'S SKILL NOT INSTINCTIVE.

The old belief that maternal skill like maternal affection is instinctive made any special education of mothers unnecessary and ridiculous.

Fabre has reported with the most exquisite discrimination upon the ingenious, patient skill of the mothers of the insect world, and has shown their almost unerring power to safeguard their young up to a certain point. When he says "Maternity is the sovereign inspiration of instinct" he marks the difference between instinct and human intelligence. Human mothers are not automatic contrivances for carrying on life, surely driven by the unconscious force of maternal instinct. They are creatures capable of learning by experiment, by the experience of others, capable of adapting to their use whatever knowledge or invention is within their reach. Maternity is still their inspiration, but it urges to endless toil, resulting too often in failure and suffering and death.

As we have imagined a mother's devotion to imply skill, so we have taken for granted almost with complacency, certainly with a sense of fatalism, the burdens and hardships of the mothers of the race. Poets have celebrated their patient courage and their sufferings, but no one has seen how to lighten the load.

TENDENCIES TOWARD SPECIAL EDUCATION FOR MOTHERS.

Finally came the education of women with the same opportunities open to them and to their brothers. At once it was found that they could learn the same lessons, with about the same facility, and the millions of boys and girls in the public schools of the United States went on quite simply studying the same subjects, until stirred by the example of Swedish schools, manual training was introduced for boys. At once it seemed reasonable to give girls also some form of teaching-by-doing, and sewing and cookery were introduced. These pursuits were chosen partly from an underlying sense of justice, that the girls might share the pleasurable interest of studies of the new type, and partly because of the obviously feminine seemliness of these household arts.

Neither of these household arts had suffered the ignominy of being considered instinctive, although here and there were those said to be "born cooks," but so few and so admired that their gift was considered super-intelligent rather than instinctive. Perhaps no country more than our own needs to have its cookery raised to a higher level, and undoubtedly one reason why cookery has made such progress as a branch of learning is that the pupils make an immediate and much valued contribution at home. Certainly sewing has never been held to be instinctive. It is an art following the fall of man, bearing still a large burden of the primal curse and fretting women's lives always. Education has done much for the art of the needle. Girls no longer piece quilts or do meaningless work in the laborious, meticulous older fashion, but in the best schools they are taught to contrive garments, to use sewing as a means to the end of useful and beautiful clothing. And some optimists believe that through the modern teaching of sewing, women may in time develop a calmer view of fashion.

But both cookery and sewing, broadened as they have been by excellent teaching to include many allied subjects, and indispensable as they are to a well-ordered household, are still arts subsidiary to the great business of a home. That business is the rearing of the children within it. Here, as we enter the home to-day, we discover that somehow the old belief in instinct, the old fatalism, is going and women in every type of home are beginning to ask why women should be ignorant of the art of conserving young life and of the knowledge on which the art rests. They demand education in this art as an enrichment and not a restriction of education. They see their task in preserving the lives of their children, in guiding them to a strong and virtuous maturity, as the greatest and the one indispensable employment of a nation—the engrossing occupation of many million women—and they ask why there should not be a great system of vocational training, based upon the preliminary education which they have received in common with their brothers who have been farther trained to special vocations or professions. They see the great moral and social implications of their task, and they feel that every contribution of science should

be utilized for its performance. This they demand in the name of the coming generations. For the best practical methods of developing this teaching we are all groping.

INFANT MORTALITY ILLUSTRATES THE NEED OF WOMEN'S EDUCATION IN CHILD WELFARE.

It can hardly be doubted that the recent world-wide interest in the waste of human life, which we call infant mortality, has served to stimulate the attention of women to the need of more direct education in the care of children. The vastness of the human interests involved in infant mortality make it a very practical question for every nation, and if it is true that the ignorance of mothers is in considerable measure responsible for infant mortality it brings the question of their education forward as one for practical statesmanship.

In our country, for example, one-fortieth of its life is renewed every year. Out of this one-fortieth, one-eighth is lost within the year. In other words, every year two and one-half million babies are born in the United States, of whom, on an average, one baby in every eight dies before he is a year old. Scientific authorities agree that this loss of life is needless if children are well born and well cared for. The physicians best trained in preventive medicine are aware of the national importance of this question. Yet how far from universal is that understanding is illustrated by the statement of a distinguished publicist who said, with some distaste, of the Children's Bureau: "I was in favor of that bureau, but I thought it was for the prevention of child labor, not for fussing about babies and teaching mothers."

The four great factors involved in infant mortality are recognized as the ignorance of mothers, civic neglect, poverty, and bad behavior on the part of parents. It has been easy to regard all these factors as permanent. As a matter of fact all can be modified or removed, and the world is gradually learning how.

Obviously one of the first expedients for lessening infant mortality is the education of mothers.

SUMMARY AND TENDENCY OF SPECIAL EDUCATION.

I venture to sum up briefly the progress thus far made, first in the subsidiary household arts and then in the direct teaching of the care of children, as an indication of the present tendency in this country.

Cookery has grown into the science of dietetics and is taught in 154 State normal schools and 252 colleges, and in a number of privately endowed institutions; thus there are more than 400 higher schools, all of which offer scientific courses and develop the large corps of teachers required by the 3,000 towns and cities which have established public school-teaching of cookery and of household arts. The bulletins of the Bureau of Education published in 1914, entitled "Education for the Home," give an admirable review of the progress of the teaching of domestic economy in the United States and point out the growing tendency toward direct teaching of the care of children.

At present, however, the most direct popular work in teaching mothers is only on the border line of regular school-teaching. The teaching has come largely because State and city boards of health have been forced to it by the official records of mortality and morbidity.

Certain States send each mother a handbook on the care of infants when the birth of her child is registered. The New York State Board of Health has traveling exhibits which have been shown to several million visitors at the annual fairs of that State. Appliances and methods for care of infants are demonstrated by a trained nurse. This board issues pamphlets for free distribution on the care of the child. It especially endeavors to reach the rural mothers.

It was the Health Department of the City of New York which in 1909 instituted Little Mothers' Leagues of girls 12 years of age or over who may enlist in special classes

to learn the care of babies. These leagues are described in *Health News* for March, 1915, published by the New York State Department of Health. The interest in the Little Mothers' Leagues is already widespread, and, in 1915, 98 cities report Little Mothers' Leagues, usually more or less in connection with the public schools.

The State of California secured a law in 1915 permitting the employment of visiting teachers to furnish instruction to mothers in their homes. Several State universities have courses on child hygiene and are adding brief institute courses, traveling exhibits, and even correspondence courses to their extension work.

May I venture to refer to the Federal Children's Bureau with which I have the honor to be connected? As one part of its general duties, it has issued pamphlets on the care and protection of infants and children, beginning with one on prenatal care; it is publishing a series of intensive statistical studies of infant mortality; and it is at the same time promoting popular local efforts to educate communities as to child welfare by such means as the observance of a nation-wide Baby Week. It may not be irrelevant to say in this connection that the correspondence which has come to the bureau in the three years of its existence from mothers both rich and poor, the hearty cooperation of mothers in its infant mortality studies and the demand for its publications all show the same eager desire for knowledge.

This new teaching in order to be effective must have many phases of development. For the child at school, the young girl, and the mother at the head of the household such advancing instruction as their successive needs indicate must be organized and made accessible.

There must also be recognized the value of centers of original research in matters affecting the family, and no system of teaching of daily care for infants or for older children will be permanently adequate unless it is constantly stimulated and renewed by the discoveries of scientific students devoted to the study of the family.

THE NEW EDUCATION FOR CHILD WELFARE MARKS A NEW ERA OF HIGHER DEVELOPMENT FOR THE HOME.

I believe it is safe to say that we are at the beginning of a new era in the higher development of the home in the United States because we are beginning to provide a new type of teaching for the mothers of the United States. The world has never doubted as a matter of sentiment that a mother's devotion is an inexhaustible, precious force. We have failed to see that it could be strengthened, made more effective, by the same means which increase a man's effective value, by specialized education. This is a colossal task. No other specialized education applies to such vast numbers of persons of such varied circumstances. Half the race is to have special training provided—more than that—made convenient for it.

In the days when the education of women was under debate, how often was it said, "Woman's place is in the home," as a warning against education or against her engaging in any work outside of the home. Now women educated and aware of life are taking this as their own slogan. They are saying, "It is true that our place is in the home during all the years when we are needed there, and our right is to be able to perform well our indispensable duties there. We must have education, and that for every woman, not for a favored few."

Already industrial and social studies have taught us that when woman is in the home she is in a place not isolated but tied by common interests to all homes. The welfare of each home is indeed the concern of all. A standard of pay which enables the father of the family to support his wife and children in health and comfort is a matter of concern to every woman. Without it mothers can not do their work. Nor can mothers do their work against a neglectful, selfish community, which fails to provide the civic cleanliness, physical and moral, which no single mother can secure alone and against whose corruption she can not protect either the life or the morals of her children.

THE EDUCATION OF WOMAN AS TESTED BY HER CIVIC AND SOCIAL RELATIONS.

By SOPHONISBA P. BREOKINRIDGE,

Assistant Professor, The University of Chicago.

To test the education of women and girls to-day by their civic and social relations is to uncover at once two facts. The first is that in the great mass of cases the education is inadequate in amount. The second, that even when ample, great waste and loss could be avoided were it different in character.

The phrase "women and girls" was used advisedly. For under the industrial condition existing in the United States, large numbers of young girls are employed at wage-paid work away from home. Upon the slender shoulders of 14-year-old girls in almost all the States (Wisconsin and Ohio are notable exceptions) may lawfully be laid the burdens of family support. In all the States, except Ohio and Wisconsin, the girls may at that age lawfully withdraw from school and enter the labor market.

That, under the conditions of industrial maladjustment existing to-day, they take advantage of this opportunity is evidenced by the fact that in 1910 one-fourth, 25.6 per cent, of all the gainfully employed females were under 21 years of age, while in some occupations the proportion under 21 rises much higher, as in the case of telephone operators 47 per cent, cotton mill operatives 48 per cent, glove workers 57 per cent, candy workers 68 per cent are under the age at which full acting capacity is supposed by the law to be reached, namely 21. Moreover, these employed young persons constitute about one-third of all in their age group,¹ that is, 32 per cent of all young women between 16 and 21 years of age were gainfully employed in 1900, and in the case of the children of foreign-born, of foreign-born girls and of negroes, these figures rise to 40 per cent, 56.8 per cent, and 49.6 per cent.

So far as their civic and social relations are concerned, it is obvious that these should be the relations of protected young persons to a protecting and cherishing community. In them lies literally the life of the race, and in their hand the maintenance of standards that shall surround the tender years of the coming generation. Large numbers, of course, pass through this experience of gainful employment into their own homes, where they take up the responsibilities of family life with its present limitations, its unpaid services, its responsibilities for spending, and its essential dependence upon efficient public administration.²

Several conclusions are obvious on examination of these facts. One is that an efficient, well-worked out plan for meeting the educational needs of these young women would undertake at least the following services:

The school system would secure the presence of the child at the earliest possible moment. For the intelligent community must take notice of the fact that, with industry organized on a world basis, with a world market, the home is no longer a self-sufficing unit in which the child can unconsciously receive instruction in various arts and crafts. And, in particular, the girl even in the rural neighborhood can no longer count on training in the domestic arts, when the canning, packing, and preserving industry are combining keen intelligenc and great resources to take away her job. The home neither can nor should be relied upon for this task in education. The school should deliberately and wisely recognize the changing character of the home and make good to the girl her loss, if it prove to be such.

Lowering the age limits at which the school will claim the child, as well as raising the age at which it will let her go, seems then of supreme importance. For if she is to pass at an early age into wage-paid work and then into her own home she must

¹ Twelfth Census Bulletin of Women at Work, pp. 8-12.

² The Census Bulletin estimates that one-half of the native white girls who take up wage-paid employment leave it, probably for marriage, within 10 years, p. 23.

be given habits of regularity, or responsibility, of industrial self-respect and these are related to the tasks appropriate to the little child. Moreover, in many cases the important attitudes are fixed as much by play as by tasks, and it is of great importance that the play of these children be supervised and directed toward this educational end. For during these years of youthful employment these young persons are called upon to take an ostensible part in fixing the wage bargain, they go to and fro untended in public places, and they must find their amusement where they can. Surely the school should take notice of this great group and treat their passing from its care to the factory, workshop, and office with seriousness.¹

There can be no question that our United States communities have been tardy in recognizing this obligation, which, while in one sense an obligation to the girl, is in a truer sense a measure in self-preservation and for community well-being. There are, however, now in almost all the States so-called compulsory attendance laws, requiring the young persons of both sexes, girls as well as boys, to attend school from the ages of 7 to 14, and in some instances 16 is the upper limit. Obviously, the period is all too short.²

But in order to obtain an adequate idea of the importance of supplying adequate preparation for the gainful employments into which our girls are allowed to go, attention should be called to two facts. One is the very narrow range of employment open to them.

It is true that the reports of the census in 1910 show women employed in 428 different employments, but 82 per cent were in only 19 of these. Feudal ideals, which persist even in our democratic form of government, shut them generally out of the higher positions in the State (Miss Lathrop is a shining exception), the church, the legal profession, the positions of prestige in business; and in those industries to which their work has long been essential, such as the textile and food-preparing industries, the opportunities for promotion, for recognition, for administrative responsibility practically do not exist. A recent comprehensive investigation into the conditions under which women and children work has shown clearly two things: First, that the opportunities for industrial careers of dignity and competence are almost nonexistent, and, second, that the so-called pin-money girl on whose shoulders all the sufferings of wage-earning women had formerly been laid is no reality but the purest fiction. The work of these young creatures is on the whole then monotonous, unskilled, uneducative in itself, and underpaid.

So convincing have been the revelations relating to the payments received by women and girls as compared with the cost of efficient living that already in eleven States,³ so-called minimum wage laws have been passed providing for governmental machinery through which shall be established a level of pay in the so-called sweated

¹ There is no opportunity here to discuss the whole principle of vocational supervision by the school during these years of early employment.

² It should be noted that in all except six States—South Carolina, Georgia, Florida, Alabama, Mississippi, and Texas—there exist the so-called compulsory attendance laws, requiring the children between the ages of 11 and 14 to attend school (from 12 weeks to the entire school year) and laying on parents and guardians the duty of sending them to school. Girls and boys are alike subject to these laws. We may then acquiesce in the failure to distinguish between the sexes in the matter of attendance and call attention simply to the fact that the daily attendance amounts to from 60 to 84 per cent of the number enrolled. It should also be noted that in most of the States there exist the so-called child labor laws prohibiting in general the employment except in domestic or agricultural labor of children less than 12 or 14 years of age, and thus removing from poor parents the temptation to place in the mill or workshop their children who should be in the schoolroom.

³ These are Massachusetts, Minnesota, California, Colorado, Oregon, Washington, Utah, Wisconsin, Arkansas, Kansas, and Nebraska. See American Labor Legislation Review, vol. vi, No. 4. Some idea of the degree to which underpayment prevails may be obtained by noting the fact that the commissions sitting and determining wages have in no case agreed that a wage below \$6 a week would suffice for decent living, while the determinations have hovered closely about the \$8 point. While the census estimated in 1905 that 49.4 per cent of the female workers over 16 years of age received less than \$6 a week and 77.6 per cent or over three-fourths, received less than \$8. Quoted by Streightoff, Standards of Living, p. 66.

trades below which no employer shall be allowed to go. It might appear that if the rates of pay are to be raised it would be well to urge the modification of the educational program so as to make these young workers worth more to their employers. And this is important, but it is more important, in my judgment, so to change their treatment as to make them realize more fully the value of their persons and of their services. "It is good for a girl" is the reply to a question put to a worker receiving 75 cents for a task for which a young man across the way received a dollar. Only through such treatment in the schoolroom and on the playground, as will induce a habit of self-respect in her work, realization of the dignity of her own person in its task, can this attitude be overcome. It is the great problem, as it is the great opportunity of the school.

But only one woman in three becomes a wage earner, and of those who become wage earners half perhaps pass into their own homes. What of the civic relations of these?

Obviously, as has been said, the efficient administration of the home involves efficient public administration and the closest cooperation between the two. The protection of the food supply against adulteration, improper handling and marketing under unwholesome conditions, the protection of the quality and wholesomeness of the milk supply on which the young and feeble must depend for nourishment, the maintenance of a safe water supply, the inspection of packing plants from which meat comes, the administration of cold storage under conditions which will regularize the price while safeguarding against both fraud and adulteration—these are conditions to the housekeeper's ability to select wisely and to buy safely. Her children must go to schools organized by the public authorities, paid for out of public money, through streets cared for by the public officials and guarded by the officers of the law. The fabrics she purchases or the clothes she buys are products of mills organized under the commercial laws of the State and inspected by public inspectors. The adequacy or inadequacy of those laws and the efficiency or inefficiency of that inspection will determine whether the garments are made under conditions of cleanliness, of light, air, space, and decent treatment of workers by bosses or under conditions of filth, mistreatment, and exploitation.

As her boys and girls grow into maturity, the conditions under which they seek their recreation become of compelling importance. The nonenforcement of the laws dealing with vice and the sale of alcoholic liquors has been a matter of open scandal in our cities since 1907, when the Chicago Vice Commission made its report. In New York similar conditions had been already made known through various committees. The protection of young men and young women from the highly organized, highly intelligent, enormously rich vice and liquor trust can not longer be innocently left to the municipal government organized on principles which have prevailed in the past.

The care of the sick, always woman's peculiar field, has taken on new shapes. With the advance in medical and surgical service, treatment becomes so highly specialized, so costly, that only in institutions provided from charitable or public funds can proper care be assured.

The ministrations to those in distress through poverty is no longer a matter of private benevolence and religious impulse only. The prevention of poverty, the constructive treatment of the dependent groups are now items in a community program in which women must take a leading part, partly because such services belong to them by ancient right, partly because they have leisure in which to do the friendly acts indicated by the expert after suitable diagnosis of the need has been made and partly because out of their experience in their own well-managed homes should come wisdom which can be shared with those less fortunate and less competent.¹

¹ No reference is made here to the enormous importance of developing an art of spending. It is assumed that that subject is treated elsewhere. Nor is anything said of the cultivation in women of the sense of the value of life. That they should be given aid in formulating those values can not be questioned at this time when they are, in the belligerent countries, asked for the time to discount if not to ignore them.

From the needs arising in the skillful administration of the home it becomes clear that in every program for the education of girls should be included such training in civics as would enable the domestic woman to understand the public organization upon which she must rely, with which she must cooperate in the performance of her ordinary tasks. Honesty and efficiency in the disposition of waste, care in the maintenance of sanitary conditions, foresight in the matter of housing control—all these can be demanded and obtained only when the domestic women acquire a habit of thinking of the municipal officer as a public servant on whom they can and must rely to supplement their own activities within their dwellings.

Moreover, if many of these public services are to be competently performed, women must be called in larger measure into the public service. Much of the inspection of mills and workshops in which women and young persons work, of the establishments in which articles of necessary use are prepared and sold, should be done by women. We have already developed in a number of our cities the necessity of having women attached to the police force, upon the staff of the juvenile and other courts dealing with the helpless groups—there are in the country perhaps five women acting in the capacity of judge. Women monopolize the professions of nursing and largely predominate in that of elementary teaching. It must be made possible for them more easily to find careers in medicine, in the practice of law, and in the higher teaching positions. This in order that the learning and technique of those professions may more fully be turned to full and noble human service. If this is so, again the educational problem becomes one of developing courage, sex respect, if I may use that term, a great consciousness that upon the recognition of their responsibilities and the performance of their duties with this large sense of opportunity depends the richness and fullness of life for the coming generations.

This means, in my judgment, such treatment as develops cooperation. It means fundamentally the discussion of the whole subject from the point of view of what women can and should do rather than of what they can not and should not undertake. It means the demand on their part to be admitted to service in high places with a continued willingness, as in the past, to serve in lowly positions.

The question arises, however, as to whether the experience in the past justifies this view. Can women take the forms of training suggested? On this point a brief survey of the educational situation in the United States will be illuminating. Girls have in the middle west and western sections of the United States enjoyed the same educational opportunities as boys so far as the elementary and secondary schools are concerned ever since the establishment of the public-school system. The practice is substantially universal coeducation, and since the University of Michigan admitted women students in 1870, girls have enjoyed in those sections the benefit of collegiate and university training as well.¹ In the Eastern and Southern States the same thing would be true so far as public education in rural communities is concerned. But the provision in the South has been very limited, and in the cities the provision of opportunities for secondary training has not always been made for girls. Nor are the southern public institutions of collegiate rank always open to women,² and the great private foundations in the East, Harvard, Yale, Princeton, have not yet admitted women to their undergraduate work. So long as there is a doubt concerning the necessity of providing educational opportunities for women, and the right of women to take advantage of those opportunities the emphasis will be laid on the capacity of women students to meet tests fixed by the educational institutions developed to meet the needs of men and boys. For this reason, among others, much less thought has been

¹ Thomas, M. Carey: *The Education of Women; Monographs on Education in the United States*, No 7, etc. Published by the Bureau of Education, 1900. President Thomas refers, of course, to the collegiate institutions which had admitted women at an earlier date, e. g., Oberlin, Ohio, 1833; the University of Utah, 1850; Antioch, Ohio, 1853; University of Iowa, 1857; Kansas, 1866; Minnesota, 1868; Nebraska, 1871.

² e. g. Georgia and the University of Virginia.

given to the content of the curriculum from the point of view of present demands upon the ability of women that might otherwise have been the case.

With this fact in mind it is interesting to notice whether or not the opportunities which have been provided for them have been taken advantage of by girls. A few brief figures from the report of the United States Commissioner of Education will throw light on this point. For the sake of clearness the organization of the school system will be recalled, namely, the fact that the program includes normally eight grades of elementary work,¹ four years of secondary work, four years of college work, or in case of certain technical courses like nursing or training for elementary teaching, two or three years of technical training. In the case of law, medicine, theology, training for teaching of professional rank, the professional training may be added on to the college course.

In the year 1912-13 there were in the elementary grades 19,064,787 pupils, of whom 17,474,269 (91.66 per cent) were in public and 1,590,518 (8.34 per cent) were in private schools. These constituted 91.69 per cent of all pupils.²

In the secondary schools there were 1,366,822, of whom 1,115,932 (81.4 per cent) were public and 250,890 (18.5 per cent) were in private schools, while in institutions of higher training there were 361,270, of whom 177,786 (50.8 per cent) were in private institutions. This means that of every 10,000 students 9,167 were in the elementary, 657 in the secondary, and 174 in the higher institutions.³ It also means that as the course advances the proportion in private as distinguished from public school increases. This means generally less generous provision for girls as compared with boys. But if the enrollment of boys and girls in the elementary and secondary public schools be examined a fair notion can be obtained of the way in which girls take advantage of such opportunities as are open to them.

In the public-school systems of the various States, 18,609,040 children were enrolled of whom 9,328,502 were boys, 9,280,538 were girls, or a difference of 47,964. That is slightly over 50 per cent (0.002 per cent) of the children enrolled were boys and slightly under 50 per cent were girls. These figures apply to the country as a whole and to the elementary schools. If one examines the figures from cities, it is interesting to note that in the cities over 5,000 the number of girls is greater than the number of boys by 33,000.⁴

Moreover, if we examine the figures for public high schools, we find that out of every 10,000 pupils 5,557 are girls as against 4,443 boys, while among the 160,606 graduates from the high schools in 1914, 95,491 were girls as against 64,491 boys. In other words, girls take advantage to a greater extent than boys of the opportunities open to them, through the secondary schools, and complete in larger number the curriculum.

If for the time it is assumed that the boys and girls remain substantially equal in numbers throughout the grades it may be estimated that of every 10,000 women and girls enrolled in educational courses, 2,155 are in the first grade, 1,380 are in the second grade, 1,288 are in the third grade, 1,196 are in the fourth grade, 1,012 are in the fifth grade, 851 are in the sixth grade, 702 are in the seventh grade, 585 are in the eighth grade, 269 are in the first year of high school, 179 are in the second year of high school, 121 are in the third year of high school, 88 are in the fourth year of high school.

If we had the figures distinguishing on the basis of sex, we should find that they grouped themselves a little differently and were slightly smaller in the lower items and slightly larger in the upper items, but two points become clear from an examination of these figures. The first is that of the enormous resources set aside by the people

¹ For this purpose the kindergarten may be omitted.

² In their instruction were engaged 553,576 persons, of whom 96,076 were men and 456,500 women.

³ In the secondary schools there were 35,982 men and 67,092 women teachers and total of 103,074, while in the institutions of higher training, including the preparatory departments attached there were in all 6,807 teachers of whom 35,717 were men and 11,090 were women.

⁴ This is not true of the group of cities of 100,000 and over. Nor is the same thing true of attendance at evening schools which seem not to have been developed to meet the needs of girls.

of this country for the education of the children in the elementary and secondary schools, the girls take advantage to at least as great an extent as boys. Nor can this be accounted for by any external influence, for the compulsory attendance laws and child-labor laws which apply to boys and girls alike are effective only up to the age of 14, and it is in the high-school years, when the compulsory age is past, that the discrepancy appears between the number of girls and the number of boys. It is therefore obvious that the girls are eager and able to take the training provided for them.

But another point already referred to becomes clear from these figures, and that is that in the case of both boys and girls, far too many leave school at an early age and far too few are able to take advantage even of the secondary schools, much less of the advantage of the higher training. Only a few more than 10 per cent of those who enter complete the high-school course.¹ From the age of 14 the elimination is rapid, and many thousands never receive more than the course of study offered in the grades.

If a question is put as to what becomes of these girls with so little education, attention may be again called to the fact that of the girls between 16 and 20 years of age, 33 per cent enter upon gainful employment, and being both young and untrained they can at best, as has been said, crowd the unskilled occupations, in which the employment is monotonous, uneducative, underpaid.

Through these experiences the great majority of girls pass to the home, for which, up to the recent past, neither the school nor the employment has prepared them.

To the high-school graduate, of course, a wider range of choice presents itself. The position in stores and offices, as sales girls, bookkeepers, typists, telephone operators, etc., besides the clerical positions in the great mail-order houses, give rise to problems of wage level, fatigue, and proper recreation, but conditions of work are often satisfactory. These likewise leave the girl without preparation for her family responsibilities while offering to relatively very few the opportunity for professional advancement.

In the colleges and universities the situation is different. Here a much larger proportion are educated in privately founded institutions, 50.79 per cent as compared with less than 10 per cent in the grades and 18 per cent in the secondary schools. The great State universities are coeducational, but the proportion of colleges not admitting women is greater, so that colleges for women only have been established to make good this lack.² In the colleges and universities, the men number 139,373 (or 64.3 per cent) as compared with 77,120 women (or 35.7 per cent) and the men, of course, graduate in correspondingly large numbers. Those taking degrees were reported in the following proportion in colleges and universities other than agricultural and mechanical colleges:

Those taking degrees were:³

	A. B.	Per cent.	S. B.	Per cent.	A. M.	Per cent.	Ph. D.	Per cent.
Men.....	7,368	50.2	5,026	82.4	1,680	66.3	446	85.9
Women.....	7,331	49.8	1,069	17.6	853	33.7	73	14.1
Total.....	14,699	100.0	6,095	100.0	2,533	100.0	519	100.0

¹ It is estimated by the Commissioner of Education that of every thousand pupils entering the schools in 1904-5, 109 will graduate from the high school in 1916, and about 14 of that number will take a college degree in 1920.

² In President Thomas's Monograph, she states that of the 567 institutions of collegiate rank, 330 were coeducational caring for 53,996 women, 145 were for men students only, and 92 for women caring for 18,916.

³ It is interesting likewise to notice the change in the relative numbers of men and women giving instruction in colleges and universities. There were 22,905 men to 4,430 women, not counting the preparatory departments, or 83.7 per cent men to 16.3 per cent women.

In the agricultural and mechanical colleges.

	A. B.	Per cent.	Bachelor's degree.	Per cent.	Advanced degree.	Per cent.
Men.....	78,923	68.5	6,716	86.08	939	72.8
Women.....	36,131	31.5	1,787	14.97	268	27.7
Total.....	115,054	100.0	8,503	100.0	1,207	100.0

Or again, in institutions training for the so-called learned professions, the men students were in great excess of the women. The students in the various professional schools were grouped as follows:

	Theology.	Law.	Medicine.	Dentistry.	Pharmacy.
Men.....	10,686	20,427	16,088	9,130	5,652
Women.....	583	821	833	185	278

In one, however, women were greatly in excess, namely, the teachers' training schools. There the men numbered only 17,569, while the women numbered 72,028, or constituted 80.3 per cent of the total; and in the nurses' training schools, the women have a complete monopoly, numbering, 1913-14, 39,597, of whom 10,234 graduated.¹

Although the women are fewer in number in the colleges and universities they have no difficulty in maintaining high standards of scholarship. Dean Marion Talbot, of the University of Chicago, gives figures showing the rank with which the women candidates for the degree of Doctor of Philosophy have received that honor, and shows that they have taken that degree with relatively greater honor than has been true of the men.²

It is, indeed, true, then, that, tested by the educational opportunities hitherto open to them, the women and girls have shown themselves able to meet the demands without sacrificing their physical well-being, without losing interest in their domestic problems, without becoming unwomanly. The women have stood the test, but they are by no means so sure that, up to the present time, the education has stood the test.

It should in all justice be pointed out that so far as formal education is concerned, the training of men to meet their civic and social relations is likewise sadly inadequate. This is doubtless largely due to the changing ideals of government and of personal responsibility which result from the mechanical inventions and the scientific discoveries. Nowhere are we adjusted to the new collectivism. Women have, however, suffered peculiarly from the failure to fit their training to their task and the community suffers with them.

Along certain lines development in educational opportunity must take place. Economics and government, history and social psychology must be added to the literature and language which have been their acknowledged sphere. The biological sciences as the basis of sanitary cooperation and hygienic standards must be included in their curriculum.

And beside the formal courses in classroom and laboratory there should be organization of the leisure to develop habits of cooperation, of group activity, to give practice in group leadership and in social as distinguished from individual appeals.

This will mean supervised and organized recreation, the elevation and dignifying of that leisure which is now for many the great peril and may become the great reservoirs from which new rich contributions to community life may be made. The

¹ Moreover, in the recently organized schools of philanthropy, of which as yet the number are too few to be noted, in the figures of the Commissioner of Education, the women outnumber the men.

² Talbot: *The Education of Women*, p. 21.

woman's club movement has been an expression of the determination of the women of the country to elevate and socialize their leisure. The effectiveness of such collective efforts can be immeasurably increased as women trained in collective effort issue from our colleges and high schools.

Halting steps are being taken in these directions. In some cities the schools are organizing well-equipped playgrounds and are including the supervised play in their day's program. In some cities, so-called deans of girls are being appointed to organize and supervise the social life in the coeducational high schools so that the leisure may be more nobly used. In some, so-called civic clubs are being organized by the women's city clubs among the girls of high-school age. With the granting of suffrage in the western States comes a quickening of interest among college students in government and economics. But nowhere so far has there been worked out an adequately equipped course by which the girls and women can be prepared to go out into the difficult experience which awaits them with a clear sense of their own essential dignity and of the importance of the contribution which they can make. Perhaps from some of the Latin-American countries in which there may develop a scheme for the education of women more carefully, frankly, and courageously adjusted to the demands of the twentieth century may come to the women of the United States help in this direction. If there should be any country in which, for example, the system of higher education were still to be developed and it could from the first be organized with full recognition of the civic and social obligations which rest upon women, the women of all other American Commonwealths would be gainers thereby. What such development would mean for the country in which it took place is suggested by the following statement by one of the leading students of social problems.¹ "Certain it is that no civilization can remain the highest, if another civilization adds to the intelligence of its men the intelligence of its women."

The CHAIRMAN. We are grateful to all of those who have helped us make a success of this meeting. We thank you for your attendance and for your attention. There being no further business, the session is declared adjourned.

Adjournment.

¹ Thomas: *Sex and Society*.

JOINT SESSION OF SUBSECTION 6 OF SECTION IV WITH SECTIONS V AND VII.

RALEIGH HOTEL,
Friday morning, December 31, 1915.

Chairman, GARDNER C. ANTHONY.

Papers presented:

Engineering nomenclature, by Alberto Smith.¹

Scientific progress and invention in relation to engineering education, by Walter Rautenstrauch.

Engineering education in the United States, by Charles S. Howe.

United States Bureau of Mines, by Van H. Manning.²

What has engineering education contributed to scientific progress and invention? by Vladimir Karapetoff.

Significance of engineering degrees in the United States, by William T. Magruder.

The influence of technical journalism on mining education, by T. A. Rickard.

The influence of technical journals on education, by T. T. Read.

The meeting was called to order at 9.50 o'clock. General W. H. Bixby, chairman of Section V, introduced the chairman of the joint session, Dean Gardner C. Anthony of Tufts College.

The first paper on the program, "Engineering nomenclature," was presented by Dr. Alberto Smith, formerly of the University of Caracas, Venezuela. Dr. Smith's paper is not yet ready for publication and so does not appear in these proceedings. In view, however, of the fact that discussion of this topic was invited at this congress by the preceding one, the discussion of Dr. Smith's paper, taken from the stenographic report, follows:

The CHAIRMAN. There can be no question as to the authority with which Dr. Smith speaks, inasmuch as he is a translator of Trautwine, and must have encountered many serious difficulties. I think the United States engineers do not appreciate the situation, or the importance of doing something about this matter. I am going to ask a word or two from the corresponding secretary of

¹ Paper not submitted for publication.

² Paper printed in volume VIII of the Proceedings of the Second Pan American Scientific Congress.

Section VII, who has encountered difficulties in another way, Señor Antonio Llano.

Sr. ANTONIO LLANO. There is very little that I can add to the very able paper that has been read by Mr. Smith, who evidently has had a great deal of experience in connection with translation work.

This question of engineering nomenclature is, as has been said here, one of the most important brought before the attention of this Congress. It may be considered from two points of view; from the point of view of one language, regardless of its relation to other languages, and from what we might call the "bilingual" point of view.

The subject is a very difficult one, and requires for its proper treatment persons of philosophical mind, of technical and literary training, and of literary taste. Unfortunately, scientists, as a rule, are not philosophers, and philosophers, as a rule, are not scientists, and very few literary men know anything about science or philosophy, especially in our countries; in fact, our philosophers and scientists pride themselves on speaking the language poorly and badly, and they think it is a disgrace to speak correctly; and, on the other hand, the literary men have no respect whatever for scientists—I am referring to Spanish-America and Spain—and that is, to a certain extent, the case in this country. There have been a few scientists who have been great philosophers. These cases are comparatively few, however. Newton had one of the greatest intellects that ever man possessed, and still his intelligence was limited within the sphere of a very few specialties.

Now, I wish to make a few remarks as to nomenclature, from the point of view of one language, and I shall confine myself to English.

In connection with the formation of names there are a few principles that ought to be observed. One of them refers to the contrasting of antithetic facts, things, or phenomena, which it would be very convenient to denote by words that have opposite significations, so that when one is defined, the opposite one would be readily understood without any formal definition. I refer to such words, for instance, as "concurrent forces" and "nonconcurrent forces." When we have defined "concurrent forces" we readily understand what is meant by "nonconcurrent forces." We have in mathematics definite intervals and indefinite intervals. We have in mechanics "live load" and "dead load." In connection with this subject, I should remark that sometimes the live load is called "moving load." It is always called that in Spanish. It is called "moving load" in English sometimes, but then in that case the opposite term should be "quiescent load," which is the antonym of "moving load."

We have some other cases in which opposite phenomena are described according to that system. We have, for instance, "direct

current" in electricity. We should naturally expect that the other kind of current would be "indirect current," but, as a matter of fact, of course, we do not have any such thing as "indirect current." The other kind of current is called "alternating current." There is no opposite meaning between the two terms, and it is necessary to define them independently. Now, here is another case, and this is very interesting and important from the philosophical and from the practical point of view. Rankin, who was a very philosophical writer, introduced the two terms "potential energy" and "actual energy." The two terms are antithetic, and it seems to me that they were very happily selected. Now, later, Sir William Thompson decided we should say "kinetic energy" instead of "actual energy," but I am inclined to think that Rankin's original expressions are preferable.

Another thing that should be taken into account in creating or forming new words or expressions is to provide for the future development of the science itself, and for all future possibilities, and not to adopt any terms that imply special theories or conditions that may be changed later. An illustration of this occurs in the name "permanent gases," used some time ago, as applied to gases which were supposed not to be susceptible of being liquefied. Later experiments showed that a great many of those gases could be liquefied, so that the term now is a misnomer. I think it has been abandoned, but it would not have been necessary to abandon a term already used for a great many years if it had been properly selected, having due regard to this principle that I am referring to now. Another thing that ought to be taken into account is the question of analogy and generality. We should endeavor to use in one science the same terms as those that are used in other sciences to describe facts or conditions of a similar character. Now, I wish to illustrate my meaning by a few examples.

We have, for instance, in the theory of structures and the mechanics of materials the expression "yield point," and I think Mr. Smith referred to that in connection with the very great difficulty he had in translating some of those terms. I do not consider that a happily selected term, even in English. We have a very good term, it seems to me, that is applied in other cases to refer to similar conditions, and that is the term "critical." We speak, for instance, in thermodynamics of the "critical temperature;" we might call it the "critical point," or something of that kind; that may not be the best term, but I merely give that as an illustration or a suggestion.

Now, I come to the much-abused Spanish language and the equally abused Spanish Academy. The Spanish Academy is the standard authority on Spanish. It is recognized as such in this country by Americans; it is not recognized as such in any other country. It amounts to very little with Spanish-Americans, and it counts for less,

perhaps, in Spain itself. It is a very venerable institution, but, unfortunately, it is not particularly active; it usually slumbers for 50 years at a time, then it wakes up and looks around and picks up the terms that are new to it, although they may have been in existence for 50 years. Of course that handicaps not only translators but all users of the Spanish language, especially in connection with scientific matters.

I must say, however, that a great many of the difficulties pointed out by Mr. Smith arise from two causes—one of them is lack of familiarity with the language itself on our part. It very often happens that we have very good and very appropriate terms with which to translate technical terms from English, French, or any other language into Spanish, but we do not happen to know them, and we do not know them because we do not have a good dictionary—a good bilingual dictionary.

I wish to make a final suggestion. I think it would be a good thing if this congress were to appoint a committee to study the subject thoroughly, and make some recommendations regarding the preparation of two dictionaries—of course, this would interest mainly Spanish-Americans—one, a Spanish dictionary of technical terms, defining all the terms in Spanish; and another a bilingual dictionary—English-Spanish and Spanish-English—mainly for the use of translators. Now, a very important thing that should be appended to this dictionary is an introduction on the art of translation, which is a very difficult art, although people do not seem to realize it, generally. It seems to be the prevailing opinion that a man born in Barcelona or Bogotá, or some other Spanish-speaking place, is perfectly competent to translate anything at all under the sun, whether he understands the subject or not. Of course, that is a very great mistake. One of the things that should be emphasized in the introduction to this dictionary is the danger of translating verbatim words that have the same form in the two languages, which sometimes leads to very ridiculous blunders.

The CHAIRMAN. Although we have a long program this morning, I do want to have one more word said by one of our most prominent United States engineers, Dr. Corthell.

Mr. CORTHELL. It is of the greatest importance for this congress to do something right now in the direction of having a common, uniform terminology for the three languages, Spanish, Portuguese, and English. I think the suggestion ought to come from this meeting or from our joint sections to the executive committee of this Congress looking to the immediate taking up of this question, of going at it in a business-like way, and getting a dictionary which we can use. We are urging closer relations in Pan America, but yet we do not have the dictionaries that will help us to achieve these relations.

The CHAIRMAN. The chairman of Section VII, Mr. Manning, is here, and will also speak upon this same subject.

Mr. MANNING. Mr. Chairman and gentlemen, I represent Mr. Jennings, who is chairman of Section VII, and I am speaking particularly for that section. I want to present a resolution which was adopted yesterday by subsection 6 of Section V, and ask this meeting to accept an amendment thereto and also to approve the resolution which was adopted yesterday. I will read it to you first, and then will put in the slight amendment which I have suggested:

UNIFORM STANDARDS FOR METHODS AND MATERIALS OF MANUFACTURE
AND COMMERCE.

"Whereas scientific, industrial and commercial relations among nations are greatly facilitated when uniform standards are in use and when the most important materials, apparatus, and machinery are sold and bought in accordance with commonly agreed specifications; and

"Whereas no such agreement is at present in force among the American countries, Be it resolved that

"This congress recommends that the respective Governments represented at the congress appoint delegates to form a permanent Pan American commission whose duty it shall be to bring about a unification of standards of measures, weights, and methods of manufacture and testing, and also to agree upon standard specifications for the principal materials entering into international commerce and manufactured articles, revising these specifications from time to time with the progress of the art."

Now, I have added, on behalf of Section VII, and particularly for subsection 1, on mining, the following words: "and technical nomenclature," which would make it read—that part—as follows:

"This congress recommends that the respective Governments represented at the congress appoint delegates to form a permanent Pan American commission, whose duty it shall be to bring about a unification of standards of measures, weights, and methods of manufacture and testing, and technical nomenclature, and also to agree upon standard specifications for the principal materials entering into international commerce and manufactured articles, revising these specifications from time to time with the progress of the art."

Now, speaking for mining, which I represent, I think the nomenclature should be standardized, not only so far as our South American friends are concerned, but on behalf of the mining engineers and mining industry of this country. I submit that, therefore, Mr. Chairman, in the form of a motion to be adopted at this meeting.

The CHAIRMAN. The amendment?

Mr. MANNING. Yes.

The CHAIRMAN. You have heard the motion which has been made by Mr. Manning, together with his amendment. Is that seconded?

Mr. VILLALON. I second it.

The CHAIRMAN. It is open for discussion, gentlemen. I will recognize Prof. Edwards.

Mr. SALAS EDWARDS (translated by Señor Villalon): I wish to remind the committee that at another section, or at a meeting of the Argentine delegates in connection with another section of the congress, it was proposed to create a university union, the duty of which should be to promote Pan American education. -I believe that this matter of appointing a committee for the purpose of compiling a technical dictionary might very well fall among the duties of this university commission, and I present that thought for the consideration of this meeting.

The CHAIRMAN. Shall we hear from others?

Mr. RAUTENSTRAUCH. I would like to ask to what extent the committee contemplates cooperating with the American Society of Electrical Engineers, the American Society of Civil Engineers, and the American Society of Mechanical Engineers, all of which bodies have committees on standardization. Does the resolution contemplate any cooperation with those committees?

Mr. MANNING. My idea was to form a board similar to the National Geographic Board, so that we would naturally ask the cooperation not only of all societies in this country, but of those in all the South American countries.

Mr. McKEVIN. The Society for the Promotion of Engineering Education now has a committee at work upon the simplification of technical terms in English, and it would be desirable in this joint board to have that engineering committee represented.

Mr. RICE. It seems to me that the two purposes are rather separate and that it would be better if you were to have the commission which deals with a standardization quite separate and apart from the other. For instance, the dictionary, I should imagine, would be a matter of years in its formation, whereas a commission which might be established to standardize any materials would get busy almost immediately. They could, perhaps, agree on certain things which would be very helpful to the industry and to communication between the different countries. For that reason, it strikes me that the resolution presented by Mr. Manning has very, very great advantages, and should be considered quite apart from the matter of the formation of a dictionary, or communication along university lines.

Mr. STRATTON. As chairman of the subsection which passed the resolution which Mr. Manning has read, I think the committee and the members of the section had distinctly in mind the fixing of such

terms—the handling of the nomenclature that was necessary in standardization. It goes without saying that any commission worthy of the name would not only consult the various engineering societies and their membership but would probably be made up from the various societies. There is certainly a great necessity for a permanent commission to handle these questions of standardization and nomenclature.

The CHAIRMAN. Are you ready for the question, gentlemen, as to the adoption of this motion, together with the amendment?

Mr. VILLALON. The necessity for appointing such a committee is fixed in the minds of everyone present, but it appears that there has been a difference of opinion as to the best way to get at it, and I would, therefore, propose that this amendment be accepted in principle, and that the details of how it should be worked out be left for some of the gentlemen here present to take up and give more detailed consideration afterwards.

The CHAIRMAN. The question has been called. Those who are in favor of the adoption of the resolution and the amendment as put, will please signify by saying aye.

The motion was thereupon unanimously carried.

The CHAIRMAN. It will be necessary to close this subject at this point.

I must now call for the next paper, "Scientific progress and invention in relation to engineering education," by Prof. Walter Rautenstrauch.

SCIENTIFIC PROGRESS AND INVENTION IN RELATION TO ENGINEERING EDUCATION.

By WALTER RAUTENSTRAUCH,

Professor of Mechanical Engineering, Columbia University.

When your distinguished chairman kindly asked me to speak a few words to you on the subject of scientific progress and invention in relation to engineering education, he assigned to me a topic which admits of discussion from the points of view of past performance or of future possibilities. With an almost limitless field of experience from which to supply material in support of the thesis that engineering education has been a most prominent factor in scientific progress and invention, in spite of the fact that many inventions and developments have been brought forth by those not formally schooled in engineering, my first inclination is to discuss the subject from the historic view point. In attempting to discover which sort of discussion will be most useful, particularly that which will provoke from your membership the most constructive criticisms and helpful suggestions, I am inclined to speak of the future and inquire what must engineering education consist in, what must be its spirit, its methods and its content that it may most successfully contribute to the industrial and economic development of the constructive and service-creating industries and through them to our material and social advancement.

Perhaps it may be profitable to briefly trace the rise and growth of that body of practices which is termed engineering and particularly that which relates to the manufacturing industries, that through this review we may come to a clearer understanding of the factors which have contributed to the development of our industrial institutions and of the kind of service demanded of those who engage in this field of practice. These characteristics of engineering service, if accurately portrayed and interpreted, will clearly point the way to the activities which our engineering schools must encompass that they may effectively contribute to scientific progress and invention. To adequately comprehend the influences which have circumstanced the economic development of a people, we must not only review the pages of political history to glean therefrom a knowledge of the growth of social customs and their expression in political forms of government, but we must also search still further for those unheralded and nonspectacular events in history which have changed the life habits of the people and established modes and ideals of living, the attempted realizations of which continually demand the readjustment of social and political institutions. Such an investigation carefully pursued will easily demonstrate that the service of the engineer, and moreover, his training for service has been a most deciding factor in the creation of those higher standards of living consequent to the realization of scientific discoveries and inventions in the constructive and service-rendering industries.

It is perhaps a little more than a century past since the most crude and cumbersome mechanisms were embodied in simple machines for spinning yarn and weaving cloth, and in further substitution of machine for hand labor to the creation of the limited necessities of daily living. Somewhat previous to this time, steam power had been introduced in pumping operations in mines, and these crude prime movers were successfully employed to the material development of the natural resources. It soon became apparent as further inventions were made, that these engines, exclusively used for pumping, could be arranged to drive these crude machines and thus permit a more elaborate combination of machinery for making and machinery for driving and a more extensive production of household goods. Gradually there were developed a series of inventions and designs which step by step supplanted the slow processes of hand labor, suggested possibilities of more elaborate developments and paved the way for that remarkable application of machinery to the service of man which characterizes the age in which we live to-day. These simple, yet operative machines, breaking down the barriers which had retarded the progress of the world for thousands of years, were created by that necessity which knows no law. As parts of machines broke in service, larger ones were made; and as certain combinations failed to function, others were devised. Progress was slow both in the development of operative machines and in the methods of their production, and many years passed by in the trial and error period of this development before certain men of genius, observing the many failures of parts began to study them, and gradually developed those foundational principles of machine construction now embodied in the sciences of the strength of materials and machine design.

Others observing the performance of steam in engines and familiar with the then known laws of physics began that series of analyses which are now known as the science of thermo-dynamics. Still others studying and classifying the motions in machines formulated therefrom the science of kinematics. Thus there was gradually introduced a body of laws and principles relating to the design, construction, and operation of machinery which enabled later builders not only to construct more understandingly but to extend the field and attempt constructions previously thought impossible. Fostered by the institutions of learning of that day, formulated and developed in their application to an everwidening field of possibilities, these laws and principles were taught and disseminated to the youths who were to build for us the foundation of civilization upon which we stand to-day. Thus through the patient

labors of the analyst and the ingenuity of his disciples and the perseverance of that faithful body of men who were inspired by the spirit of these creations, there is hardly a phase of human endeavor in which the services of the engineer are not reflected.

Look about your own home; your house is built of bricks made by machines, the woodwork, plaster, nails, wall paper, pipes and fittings, rugs, carpets, curtains, linen, clothes, hats and shoes, soap and towels, gas and electric fixtures, cooking utensils, these and many others are the direct result of the operation of machinery. The food on your table, baked, toasted, cooked, and put into containers by machinery, kept in cold storage by machinery, and transported by machinery, so that the fruits, cereals, or meats of Florida, California, Europe, South America, and Asia are at your doors at a price within the reach of all. The machinery which makes possible all these things, completely changing the conditions of living in the past two generations, is the product of that group of men who served the people as engineers.

But engineering is more than the designing, building, and operating of machinery. At the time when it was learned that machinery might be employed in substitution for hand labor, and that power could be used to operate this machinery, it was also found desirable to collect such machines about the source of power. The grouping of machinery, and its housing in buildings, brought together many who, being concerned day in and day out with this one thing, gave rise to a new group in the social world, namely, the industrial workers. A new element, therefore, had to be considered, and those who had constructed the machines were now called upon to direct the labors of men engaged in their operation. The machine constructor, with his knowledge of forces and their applications to production, proved to be best qualified to control the men who must use these machines. The individual, isolated workman, who supplied his own capital, purchased the raw material, laid out the work, made the product, and sold the goods, gave way to the larger industrial unit with its subdivision of functions. To-day, therefore, the making of every article of commerce represents the combined endeavors of capitalists and investors in industrial securities, operators and laborers of all classes, managers, distributors and carriers, the interests of which are the interests of the people, the importance of which is so great that nation will war with nation to protect the operation of its manufacturing institution. So tremendous has been the growth of the industries founded on machinery that to-day in the United States the manufacturing industries employ over six million men and women who, through their earnings, directly support 25,000,000 persons, or nearly one-fourth of our entire population. If to these we add those employed in transportation, which is also founded on machinery, we can account for as many more and find nearly one-half of our population directly supported by the earners of wages in the manufacturing and transportation industries.

Not only has the use of machinery in production brought together large masses of people whose labor must be directed by the engineer, but it has also caused great aggregations of capital, making possible the possession of machinery, equipment, and materials to work upon. Because of his knowledge of the characteristics of materials and machinery, and his ability to judge their income-bearing value, the engineer has been intrusted with their selection as well as their use, and, therefore, has become intimately identified with the financial phase of the industries. The capital invested in the manufacturing industries alone in the United States amounts to the colossal sum of fifteen thousand million dollars, and the annual value of their products is over twenty thousand million dollars. Thus engineering has become that profession which is concerned with materials, machinery, money, and men; its practice includes the design, construction, performance, and use of machinery in the creation of services such as light, heat, power, transportation, communication, and refrigeration, in the construction and operation of our public works, and in the manufacture of the articles of commerce too numerous to mention, and also the management of labor and the

supervision of the economic conditions affecting the output and marketing of the products of the factory. While engineering is highly technical it is essentially an economic study. Just as the banker operates through the medium of bonds and stocks and is successful as he understands the laws which condition their value, so the engineer operates through materials, machinery, and men, and is successful as he understands the laws which condition the existence and prosperity of manufacturing institutions.

To clearly define the province of engineering education in this development of our material resources and institutions is by no means an easy task, yet it can not be denied that its influence both directly and indirectly has been a most essential factor. A review of present developments in our engineering schools seems to indicate that perhaps the most direct effect of engineering education in the past has been its contribution to purely scientific facts and principles to the exclusion from consideration of those conditions under which these may be commercially useful. However this may be, it appears that the economic necessities of the industries have forced themselves to the attention of engineering instructors, so that we find our engineering schools at the present time earnestly endeavoring to modify both the content and spirit of the subject matter handled and more closely parallel the economic requirements of engineering practice. The tendency in our engineering schools to-day, therefore, while emphasizing the necessity of excellence in the treatment of scientific facts and methods of analysis is increasingly toward that commercial and economic treatment which is so essential to an adequate knowledge of the use of science in engineering service. We find, accordingly, those subjects in engineering instruction which were formerly thought to have their sole foundation in the science of physics, chemistry, and mathematics and which conveniently admitted of formulated treatment, are modified in their presentation to the inclusion of questions of cost and the influences of economic environment.

While it was once believed that because engineering practice required a knowledge of scientific facts and principles, instruction in these alone was a sufficient preparation for the practice of the profession, our more progressive schools have realized that this is not sufficient and that a knowledge of the economic adaptability of facts and principles is of equal if not of greater importance to an adequate understanding of engineering practice. Accordingly, while formerly a student was taught to manipulate with the mathematics of thermodynamics in explanation of the behavior of steam in an engine and instructed in the principles of performance of water wheels through the sciences of hydraulics and mechanics, and to compute the stresses in a framed structure through the principles of graphical statics, he is now taught, in addition to these, that the cost at which power may be generated is determinable by clearly defined principles and laws, by means of which he may decide whether a steam-power plant or oil-engine installation or water-power development each of which with a given type of housing structure is capable of producing power in this locality or that locality with minimum cost of investment, depreciation charges and cost of labor and materials in operation to satisfy a real demand and justify its creation. He learns not only how a machine pattern is made, by some method selected for demonstration by the instructor, but also that it may be made in a variety of ways each of which is justifiable according to the quantity of production, demand for rearrangement of parts, adaptability to economic methods of molding, and to other conditions effecting the cost of producing castings by it. He not only learns to determine the proportions of machine parts to suit the loads imposed upon them, but also that the proportions must be modified to permit the part to be duplicated in a series of sizes of a given class of machines, or to facilitate foundry and machinery operations that the completed machine may be supplied to the market at a price and in competition with other manufacturers of the same class of goods. These attempts in the past of our engineering schools to make the instruction in engineering

subjects more nearly representative of standard practice have met with more or less success, depending on the closeness of contact of the instructors with engineering practice and their ability to incorporate the spirit of engineering in methods of instruction.

The effect of a proper amalgamation of the purely scientific and technological aspects of engineering with the economic and commercial principles upon which successful practice is founded is to create in the student that sense of proportion and judgment which tend to economize his efforts in contributing to scientific progress and inventions. Not only will he know how to proceed to judge the scientific feasibility of a project but also to determine what commercial limitations make a scientifically possible project impracticable and, moreover, if he has that rare spirit of inquiry developed by proper methods of instruction he may be able to determine that commercial limitation in a given field of practice exists because of an insufficient or entire lack of knowledge of scientific facts and principles, and thus be led to an investigation of scientific foundations, the successful issue of which may be a most important contribution to the revolution of engineering practice in a given field. Perhaps the most striking instance of this later kind of scientific investigation is that conducted by the late Dr. Fred W. Taylor. His studies in the ancient art of cutting metals and the discoveries resulting therefrom have not only caused the redesign of nearly all of our metal-cutting machines to the improvement of their functional characteristics, but has completely revolutionized the methods of machine-shop management, the influence of which is felt in many quarters not at all concerned with engineering processes. Just as our schools have had to adjust themselves in the past to satisfy the demands made upon them by the progress of engineering developments, so also the wonderful advances and possibilities of our present day in the inventions of machinery and processes resulting in the creation of research departments in such industries which could afford them, and the establishment in a few instances of private research institutions, have forced the attention of our engineering schools in this direction.

The question of the establishment of research in our schools of engineering and, moreover, the spirit which shall dominate this development is of great importance not only to the schools themselves but also to the industries both large and small to the advantage of which these laboratories are proposed. Those industries both at home and abroad in which research laboratories have been installed have demonstrated beyond question their value to scientific progress. These conditions also demonstrate the necessity for establishing research laboratories accessible to all engineering industries including those which cannot afford the investment and maintenance charges of private equipment. It seems quite proper, therefore, that engineering research laboratories should be installed in those universities most likely to maintain an intimate contact with industrial institutions and through cooperation with which the spirit and content of research work will harmonize with the real condition to be met. The usefulness of such laboratories to which any manufacturer may bring his problems for analytical and experimental investigation is quite apparent and needs no demonstration. The cooperation of the manufacturer in the use of his complete plant or a part thereof for certain investigations beyond the scope of the laboratory equipment and the successful issue of which can only be accomplished with full plant equipment is most essential in the pursuit of this new kind of research work. With this sort of cooperation between the industries and the universities, not only will it be possible to advance the art in many lines of production but there will be provided skilled engineers and investigators through the graduate students assisting in these investigations who will thus be available for the very best type of technical service. It is impossible to foretell what advantage can result from this source. According to the latest reports of the United States census the following principal industries are enumerated:

Statistics of industries in the United States.

[Prepared by Dr. Charles E. Lucke, head of the mechanical engineering department, Columbia University, New York City.]

Industry.	Number of establishments.	Wage earners (average number).	Value of products.	Value added by manufacture.
All industries.....	268,491	6,615,046	\$20,672,051,870	\$8,529,260,992
Industries with products valued at \$500,000,000 or over:				
Slaughtering and meat packing.....	1,641	89,728	1,370,568,101	167,740,317
Foundry and machine shop products.....	13,253	531,011	1,228,475,148	688,464,009
Lumber and timber products.....	40,671	695,019	1,156,128,747	648,011,168
Iron and steel, steel works and rolling mills.....	446	240,076	985,722,534	328,221,678
Flour-mill and gristmill products.....	11,691	39,453	883,584,405	116,007,926
Printing and publishing.....	31,445	258,434	737,876,087	536,101,497
Cotton goods, including cotton small wares.....	1,324	378,880	628,391,813	257,382,343
Clothing, men's, including shirts.....	6,354	239,696	568,076,635	270,561,189
Boots and shoes, including cut stock and findings	1,918	198,297	512,797,042	180,050,429
Industries with products valued at \$100,000,000 but less than \$500,000,000:				
Woolen, worsted and felt goods and wool hats...	985	166,810	435,978,558	153,100,519
Tobacco manufactures.....	15,522	166,810	416,095,104	239,509,483
Cars and general shop construction and repairs.....	1,145	282,174	405,000,727	206,187,315
Bread and other bakery products.....	23,926	100,216	396,964,944	158,831,181
Iron and steel, blast furnaces.....	206	38,429	391,492,353	70,791,394
Clothing, women's.....	4,558	153,743	384,751,049	175,963,423
Smelting and refining copper.....	38	15,628	378,606,074	35,274,336
Liquors, malt.....	1,414	54,579	374,730,066	278,124,480
Leather, tanned, curried and finished.....	919	62,202	327,874,187	79,595,254
Butter, cheese, and condensed milk.....	8,479	18,431	274,557,718	39,011,654
Paper and wood pulp.....	777	75,978	267,656,064	102,214,623
Automobiles, including bodies and parts.....	743	75,721	249,202,075	117,556,329
Sugar, refining, not including beet sugar.....	19	9,399	248,028,659	29,340,609
Furniture and refrigerators.....	3,155	128,452	239,886,506	131,111,664
Petroleum, refining.....	147	13,929	236,997,659	37,724,257
Electrical machinery, apparatus and supplies.....	1,009	87,256	221,308,563	112,742,159
Liquors, distilled.....	613	6,430	204,690,412	168,722,519
Hosiery and knit goods.....	1,374	129,275	200,143,527	89,902,474
Copper, tin, and sheet-iron products.....	4,228	73,615	199,824,218	87,214,945
Silk and silk goods, including throwsters.....	852	99,037	196,911,667	89,144,751
Smelting and refining.....	28	7,424	167,308,650	15,442,528
Gas, illuminating and heating.....	1,296	37,215	166,814,371	114,396,527
Carriages and wagons and materials.....	5,392	60,928	139,592,337	77,941,259
Canning and preserving.....	3,767	98,968	157,101,201	55,278,142
Brass and bronze products.....	1,021	30,618	149,999,058	50,760,646
Oil, cottonseed, and cake.....	817	17,071	147,867,94	28,034,419
Agricultural implements.....	640	50,551	146,329,268	86,022,749
Patent medicines and compounds and druggists' preparations.....	3,642	22,896	141,941,602	91,565,937
Confectionery.....	1,944	44,638	134,795,913	53,645,140
Rubber goods, not elsewhere specified.....	227	26,521	128,435,747	46,243,926
Food preparations.....	1,213	14,968	125,331,161	41,389,032
Paint and varnish.....	791	14,240	124,880,422	45,873,867
Cars, steam railroad, not including operations of railroad companies.....	110	43,086	123,792,627	44,976,766
Chemicals.....	349	23,714	117,688,887	53,567,351
Marble and stone work.....	4,964	65,603	113,092,967	75,695,833
Soap.....	420	12,999	111,357,777	39,178,359
Coffees and spice, roasting and grinding.....	607	7,490	110,532,787	27,527,689
Leather goods.....	2,375	34,907	104,819,008	44,692,240
Fertilizers.....	650	18,310	103,960,213	34,438,213
Industries with products valued at \$25,000,000 but less than \$100,000,000:				
Coke.....	315	29,273	95,696,622	31,672,095
Brick and tile.....	4,261	76,528	92,776,504	69,040,402
Glass.....	363	68,911	92,065,203	59,975,704
Musical instruments, pianos and organ and materials.....	507	38,020	89,789,544	46,024,807
Furnishing goods, men's.....	908	38,482	87,710,197	38,585,354
Millinery and lace goods.....	1,637	39,201	85,893,032	40,853,357
Wire.....	56	18,084	84,486,518	23,943,587
Dyeing and finishing textiles.....	426	44,046	83,536,432	48,295,131
Jewelry.....	1,537	30,347	80,349,874	43,249,874
Stoves and furnaces, including gas and oil stoves	576	37,130	78,853,323	49,515,062
Pottery, terra-cotta and fire-clay products.....	822	56,168	76,118,961	54,207,956
Shipbuilding, including boat building.....	1,353	40,506	73,390,315	42,145,967
Carpets and rugs, other than rag.....	139	33,307	71,188,152	31,626,148
Cement.....	135	26,775	63,205,455	33,861,664
Cordage and twine and jute and linen goods.....	164	25,820	61,019,986	20,106,176
Cooperate and wooden goods, not elsewhere specified.....	1,963	26,269	60,248,260	23,320,419
Fur goods.....	1,241	11,927	56,937,549	24,160,644

Statistics of industries in the United States—Continued.

Industry.	Number of establishments.	Wage earners (average number).	Value of products.	Value added by manufacture.
Industries with products valued at \$25,000,000 but less than \$100,000,000—Continued.				
Paper goods, not elsewhere specified.....	403	19,211	\$55,170,564	\$23,921,645
Bags, other than paper.....	109	7,968	54,851,922	8,517,154
Boxes, fancy and paper.....	949	39,514	54,450,015	28,733,774
Cutlery and tools, not elsewhere specified.....	969	32,966	53,265,757	34,986,556
Boots and shoes, rubber.....	22	17,612	48,720,567	30,143,591
Glucose and starch.....	118	4,773	48,799,411	11,900,540
Beet sugar.....	58	7,904	48,132,383	20,857,213
Tin plate and ternplate.....	31	5,352	47,989,945	6,080,211
Hats, fur-felt.....	273	25,064	47,864,030	25,735,399
Gas and electric fixtures and lamps and re-factors.....	619	18,961	45,057,372	24,599,015
Mineral and soda waters.....	4,916	13,147	43,503,464	27,042,938
Ice, manufactured.....	2,004	16,114	42,953,955	11,635,557
Silverware and plated ware.....	188	16,610	23,238,547	23,896,440
Wirework, including wire rope and cable.....	611	12,348	41,997,952	17,544,036
Explosives.....	85	6,274	40,139,661	17,328,113
Malt.....	114	1,760	38,262,338	7,787,934
Oil, linsed.....	29	1,452	36,738,094	5,704,118
Mattresses and spring beds.....	990	11,822	35,783,154	15,300,646
Clocks and watches, including cases and materials.....	120	23,867	35,196,842	24,066,144
Smelting and refining, zinc.....	29	6,655	34,205,494	8,975,893
Firearms and ammunition.....	66	14,715	34,111,664	17,080,901
Corsets.....	138	17,644	33,257,187	17,616,772
Cars and general shop construction and repair by street railroad companies.....	541	22,418	31,962,561	16,794,662
Locomotives, not made by railroad companies.....	16	14,909	31,582,382	16,523,319
Iron and steel pipe, wrought.....	28	6,817	30,886,170	7,944,361
Oil, not elsewhere specified.....	189	1,715	30,886,122	9,459,161
Sugar and molasses.....	214	4,127	30,620,738	9,335,894
Sewing machines, cases and attachments.....	47	19,298	28,262,416	16,897,771
Smelting and refining, not from the ore.....	89	2,147	28,072,041	4,906,622
Turpentine and rosin.....	1,686	20,511	25,295,017	20,384,179
Industries with products valued at \$10,000,000 but less than \$25,000,000:				
Belting and hose, woven and rubber.....	46	6,819	24,720,221	19,226,814
Coffins, burial cases and undertakers' goods.....	284	9,339	24,525,905	12,541,638
Iron and steel, bolts, nuts, washers and rivets.....	108	11,345	24,484,907	11,080,572
Artificial feathers, flowers, and plumes.....	412	10,016	23,960,567	10,363,163
Cash registers and calculating machines.....	50	7,495	23,706,328	20,185,860
Belting and hose, leather.....	139	3,008	23,091,857	8,080,284
Gloves and mittens, leather.....	377	11,364	22,630,998	10,422,597
Gold and silver, reducing and refining, not from the ore.....	62	458	22,611,764	1,628,055
Grease and tallow.....	393	4,367	22,419,395	7,875,956
Oilcloth and linoleum.....	31	5,201	21,339,022	7,788,921
Buttons.....	441	16,427	22,708,065	13,166,774
Fancy articles, not elsewhere specified.....	404	12,198	22,632,199	12,271,485
Photographic apparatus and materials.....	103	5,195	22,561,941	15,833,709
Chocolate and cocoa products.....	27	2,826	22,390,122	6,867,162
Rice, cleaning and polishing.....	71	1,289	22,371,457	2,870,377
Wood, turned and carved.....	1,060	14,139	22,198,572	12,454,876
Hats, straw.....	98	8,814	21,424,255	9,956,055
Baking powders and yeast.....	144	2,155	20,774,886	11,436,603
Iron and steel forgings.....	172	8,183	20,293,440	10,033,589
Babbitt metal and solder.....	109	297	19,767,025	3,498,235
Typewriters and supplies.....	89	9,578	19,718,787	15,641,421
Roofing materials.....	117	2,465	19,204,423	6,746,246
Artificial stone.....	3,438	9,967	18,595,088	11,552,746
Window shades and fixtures.....	219	3,890	18,595,088	5,918,325
House-furnishing goods, not elsewhere specified.....	260	4,907	18,508,586	6,138,078
Lamps.....	853	13,897	17,951,060	11,221,081
Stationery goods, not elsewhere specified.....	153	6,206	16,647,123	8,903,567
Glass, cutting, staining, and ornamenting.....	583	9,806	16,647,123	8,903,567
Dyes, duffs and extracts.....	107	2,397	15,954,574	6,270,923
Umbrellas and canes.....	256	5,472	15,884,000	5,808,207
Bags, paper.....	74	3,212	15,697,939	5,343,367
Deerymen's, poulterers', and apiarists' supplies.....	223	4,871	15,463,492	9,374,591
Brushes.....	384	6,954	14,694,003	7,507,066
Blacking and cleansing and polishing preparations.....	501	2,417	14,679,120	7,716,728
Awnings, tents, and sails.....	621	4,242	14,490,020	6,122,229
Wall paper.....	45	4,037	14,449,247	6,885,896
Brooms.....	896	5,199	14,431,582	6,040,260
Wood preserving.....	58	2,408	14,098,978	4,770,526
Glue.....	65	3,285	13,717,820	6,183,291
Hats and caps, other than felt, straw, and wool.....	494	6,201	13,689,338	6,968,886
Signs and advertising novelties.....	288	5,540	13,546,385	8,837,470

Statistics of industries in the United States—Continued.

Industry.	Number of establishments.	Wage earners (average number).	Value of products.	Value added by manufacture.
Industries with products valued at \$10,000,000 but less than \$25,000,000—Continued.				
Looking-glasses and picture frames.....	427	6,021	\$13,475,082	\$7,950,076
Liquors, vinous.....	290	1,911	13,120,846	6,495,313
Upholstering materials.....	230	4,067	13,053,561	4,984,867
Wall plaster.....	198	4,791	12,803,758	6,796,581
Surgical appliances and artificial limbs.....	324	4,241	12,399,314	7,027,658
Steam packing.....	153	3,648	12,159,969	5,809,696
Optical goods.....	217	6,398	11,734,811	7,547,354
Phonographs and graphophones.....	18	5,199	11,736,966	8,626,605
Photo-engraving.....	313	5,343	11,024,000	9,49,020
Saws.....	96	4,832	11,535,131	6,623,865
Waste.....	53	1,897	11,398,011	2,561,422
Marches.....	26	3,631	11,353,128	6,754,260
Salt.....	124	4,936	11,327,434	6,124,480
Hairwork.....	250	3,534	11,216,175	5,135,565
Sporting and athletic goods.....	180	5,321	11,052,286	5,487,520
Dentists' materials.....	87	1,573	10,836,568	2,734,236
Bicycles, motorcycles, and parts.....	95	4,437	10,698,567	5,615,998
Instruments, professional and scientific.....	263	4,817	10,593,901	7,585,617
Lard, refined, not made in slaughtering and meat-packing establishments.....	7	399	10,326,471	695,240
Industries with products valued at \$5,000,000 but less than \$10,000,000:				
Sulphuric, nitric and mixed acids.....	42	2,252	9,884,057	4,498,229
Wood distillation, not including turpentine and rosin.....	120	2,721	9,736,998	3,861,147
Peanuts, grading, roasting, cleaning, and shelling.....	46	1,949	9,736,551	1,124,487
Cordials and sirups.....	117	1,085	9,662,176	4,320,906
Mirrors.....	148	2,994	9,570,797	2,696,091
Lapidary work.....	77	627	9,172,833	2,612,833
Lead, bar, pipe, and sheet.....	33	802	9,144,930	1,733,397
Springs, steel, car, and carriage.....	54	3,196	9,005,362	4,278,092
Models and patterns, not including paper patterns.....	709	4,171	8,868,166	5,991,936
Ink, printing.....	71	1,121	8,865,504	4,690,587
Flavoring extracts.....	420	1,229	8,828,034	4,369,806
Carriages and sleds, children's.....	84	5,300	8,805,129	4,676,255
Scales and balances.....	87	3,559	8,785,642	6,081,645
Boxes, cigar.....	274	6,115	8,491,062	4,178,038
Safes and vaults.....	42	3,343	8,490,541	5,048,011
Vinegar and cider.....	963	1,542	8,447,577	3,488,532
Toys and games.....	226	5,305	8,264,135	4,709,897
Hat and cap material.....	74	2,367	8,236,319	2,856,349
Butter, reworking.....	24	295	8,200,523	776,875
Iron and steel, nails and spikes, cut and wrought, including wire nails, not made in steelworks or rolling mills.....	57	2,765	8,191,620	4,219,208
Oleomargarine.....	12	606	8,147,620	1,650,997
Flags, banners, regalia, society badges, and emblems.....	211	3,572	8,112,989	4,304,240
Cars, street railroad, not including operations of railroad companies.....	14	3,583	7,809,866	3,549,396
Shoddy.....	88	2,041	7,446,384	2,445,658
Pencils, lead.....	11	4,134	7,378,744	3,783,111
Galvanizing.....	46	1,447	7,338,330	1,619,631
Show cases.....	149	3,399	7,167,100	4,027,239
Emery and other abrasive wheels.....	51	1,943	6,710,668	4,050,351
Needles, pins, hooks, and eyes.....	49	4,638	6,694,096	4,365,421
Windmills.....	34	2,337	6,676,599	3,345,236
Soda-water apparatus.....	63	1,797	6,555,597	4,113,059
Stereotyping and electrotyping.....	174	2,850	6,338,694	4,618,592
Paving materials.....	49	1,419	6,229,400	2,751,794
Screws, wood.....	11	3,464	6,198,955	3,890,429
Drug grinding.....	25	922	6,006,999	2,553,279
Cork cutting.....	62	3,142	5,939,938	2,505,317
Billiard tables and materials.....	84	1,495	5,877,837	2,509,180
Washing machines and clothes wringer.....	100	1,853	5,824,839	2,987,528
Baskets, and rattan and willow ware.....	466	4,064	5,695,336	3,859,948
Files.....	87	4,168	5,691,208	4,085,472
Pumps, not including steam pumps.....	102	2,136	5,582,982	3,096,300
Pipes, tobacco.....	62	2,775	5,311,900	2,883,245
Wool pulling.....	37	631	5,180,856	1,077,606
Industries with products less than \$5,000,000 in value:				
Mudclage and paste.....	127	538	4,918,341	1,634,900
Pens, fountain, stylographic, and gold.....	65	1,225	4,738,693	2,492,239
Type founding and printing materials.....	122	2,026	4,703,506	2,931,275
Kaolin and ground earths.....	119	1,990	4,680,548	2,638,737

Statistics of industries in the United States—Continued.

Industry.	Number of establishments.	Wage earners (average number).	Value of products.	Value added by manufacture.
Industries with products less than \$5,000,000 in value—Continued.				
Labels and tags.....	96	2,313	\$4,000,905	\$2,750,626
Electroplating.....	461	2,717	4,509,559	3,304,374
Sand and emery paper and cloth.....	10	611	4,357,792	1,975,334
Moving pictures.....	16	506	4,206,448	2,014,323
Lests.....	60	1,728	4,158,933	2,834,478
Clothing-horse.....	23	1,048	4,134,864	1,861,476
Whips.....	57	1,546	3,948,643	2,363,900
Hand stamps and stencils and brands.....	361	1,651	3,673,026	2,545,722
Statuary and art goods.....	194	1,660	3,441,546	2,761,216
Tin foil.....	10	983	3,418,818	1,152,245
Enameling and japanning.....	108	2,125	3,315,694	1,819,612
Wool scouring.....	28	1,142	3,280,215	1,167,113
Musical instruments and materials, not specified.....	187	1,822	3,228,108	2,338,108
Candles.....	16	539	3,130,521	954,419
Jewelry and instrument cases.....	120	2,070	3,115,519	1,905,242
Screws, machine.....	43	1,667	3,014,112	1,853,634
Iron and steel doors and shutters.....	29	1,601	3,005,685	1,722,780
Gold and silver, leaf and foil.....	88	1,383	2,630,500	1,112,626
Paper patterns.....	27	921	2,610,714	1,964,744
Carpets, rag.....	428	1,982	2,567,569	1,878,948
Ink, writing.....	47	505	2,505,414	1,427,406
Mats and matting.....	12	987	2,431,615	1,365,049
Furs, dressed.....	93	1,241	2,390,599	1,580,159
Artists' materials.....	46	658	2,339,935	979,445
Foundry supplies.....	49	464	2,297,690	1,045,804
Fireworks.....	42	1,403	2,269,349	1,373,159
Engraving and die-sinking.....	263	1,308	2,249,861	1,890,097
Haircloth.....	14	538	2,230,033	616,453
Crucibles.....	12	335	1,849,326	760,144
Pulp goods.....	14	783	1,770,107	799,169
Oil, essential.....	68	290	1,737,234	481,756
Grindstones.....	14	1,394	1,688,171	1,219,979
Wheelbarrows.....	24	664	1,625,478	910,601
Cloth, sponging and refinishing.....	57	975	1,543,872	1,458,669
Axle grease.....	38	176	1,480,811	652,696
Graphite and graphite refining.....	9	162	1,139,587	734,108
Bone, carbon, and lampblack.....	27	228	1,063,494	648,886
Bluing.....	82	313	1,074,231	580,489
Card cutting and designing.....	68	526	1,031,392	667,279
Horseshoes, not made in steelworks or rolling mills.....	19	283	1,014,576	658,722
Vault lights and ventilators.....	37	327	956,720	618,390
Engravers' materials.....	18	129	920,727	311,674
Oil, castor.....	4	54	904,825	248,647
Charcoal.....	76	631	872,522	424,945
China decorating.....	40	828	786,283	475,176
Clothing, men's, buttonholes.....	146	550	780,720	676,143
Fire extinguishers, chemical.....	31	196	754,165	449,344
Engraving, wood.....	82	318	711,279	585,178
Hammocks.....	15	272	578,505	267,269
Pens, steel.....	5	669	576,696	481,430
Wood, carpet.....	10	184	490,339	262,654
Flax and hemp, dressed.....	16	164	467,346	131,046
Oakum.....	6	113	338,497	106,506
Fuel, manufactured.....	11	88	311,010	156,362
Hones and whetstones.....	18	152	267,932	157,636
Rules, ivory and wood.....	9	109	143,811	112,979
Calcium lights.....	10	15	52,216	28,322
All other industries.....	8	96	390,206	275,154

Can it be thought for one moment that these industries will not be benefited, and through them the people at large, by a most intimate association with the trained scientists and investigators or that the engineering schools on the other hand, upon which the industries depend for the men who shall advance the sciences and arts they encompass, will be better able to prepare the workers in scientific fields?

"The philosopher may be delighted with the extent of his views, the artificer with the readiness of his hands, but let the one remember that without mechanical performance refined speculation is an empty dream and the other that without theoretical reasoning dexterity is little more than brute instinct."—*Samuel Johnson.*

The time has passed, if, indeed, it ever has been, when the industries and the engineering schools can come to their full possibilities without close cooperation. The separation of the two institutions whose technical interests at least are one has been a loss to both in spite of the rapid development of each. The men coming from our schools have not been as well prepared for immediate usefulness as they might have been and the industries on the other hand have failed to profit by the results of scientific discoveries which have never become known beyond academic circles. In fact one of the greatest services to be rendered by our engineering schools lies not so much in the discovery of new facts and principles but rather in the introduction in the industries of many scientific discoveries long dormant in the archives of the scientist, the commercial possibilities of which have never been appreciated. It is indeed encouraging to note the awakening of a few of our industries to a realization of the possibilities which lie in a more intimate contact with our engineering schools and to know that some of our universities are eager to place the services of their investigators at their disposal. The union of these two interests through the medium of properly equipped industrial laboratories is believed to be the beginning of a new era in the industrial developments of this century. The patient search for scientific laws and principles underlying industrial processes and economic relations by those skilled in methods of research, and moreover, their careful and judicious application to an almost limitless field of human endeavor of the already established facts and laws which have never been put to effective use, together with the preparation of high skilled engineers capable of making and supervising these applications, will give an impetus to economic progress which the world has never seen and raise the nation fostering this ideal to a plane of civilization far beyond our fondest hopes.

The CHAIRMAN. When the committee on engineering education first met, the thing of first consideration was a paper on the subject of technical education in the United States, and the selection of its author was a matter of considerable concern to the committee. We have been very successful in securing the right man for the place, and I take great pleasure in presenting to you Dr. Charles S. Howe, president of the Case School of Applied Science, of Cleveland, Ohio, who will speak on the subject of engineering education in the United States.

Mr. HOWE. Mr. Chairman and gentlemen, it is evident that in the limited time at my disposal I can not treat exhaustively the subject of engineering education in the United States. I have, therefore, tried to pick out only a few of the many points which might be discussed. In preparing this paper I had to keep in mind the fact that it would be read before the Pan American Congress, and to take up subjects in such a way that those not very familiar with engineering education might find something of interest in it.

ENGINEERING EDUCATION IN THE UNITED STATES.

By CHARLES S. HOWE,

President Case School of Applied Science, Cleveland, Ohio.

Engineering education is an outgrowth of the idea that men may be prepared for any trade or business or profession in a school. This idea has arisen from time to

time in the minds of some men engaged in various branches of work, but has been very slowly accepted as a general truth. In considering the application of this idea we must remember that a school is a place where something is taught and a teacher is a person who teaches something to one who does not know it. Engineering may have originated in military necessity or have come about through the overflowing of the Nile, but in either case some practice in the subject has in every country very greatly preceded systematic instruction. Without attempting to give any history of the progress of engineering it may be said that the building of roads, bridges, and other structures was of necessity taken up by armies long before schools were established.

It is somewhat difficult to determine just when engineering instruction began, because in the early schools engineering and vocational instruction were intermingled. We know, however, that in France the *École des Ponts et Chaussées* and the *École des Mines* were established before the French Revolution, that in Germany some of the technical high schools were organized in the early part of the last century or even earlier, and a number of others were instituted before 1850. It was not, however, until 1879 that two of the technical schools in Berlin were united to form the present institution located at Charlottenburg. In the early days of its work the Berlin School taught surveyors, architects, and masons, and all similar institutions gave a large amount of vocational training.

Following the example of these foreign countries, there were established in the United States previous to 1862 several institutions giving engineering and scientific work. Thus, the Rensselaer Polytechnic Institute was founded in 1824, but it did not offer a four years' course until 1850; the engineering course at the University of Michigan was established in 1837; that at Union College in 1845; the Lawrence Scientific School at Harvard University in 1847; the Sheffield Scientific School of Yale University in the same year.

Before 1862 these schools were all small and for two reasons: First, because the development of the country had not as yet made necessary a large number of trained engineers; and, second, because it was the belief of many engineers and manufacturers that engineering could not be taught in a school. Those who have held to the belief that anything which must be learned can be taught in a school have had to fight prejudice and indifference for many years before they have succeeded in establishing the institutions which they sought to organize. Perhaps that prejudice has not been stronger in America than in any other country, but it has existed here to a very great degree.

The history of the development of all professional schools has been practically the same. The first law school in the United States was established in 1784. Previous to that, and even for many years after, the young man who desired to become a lawyer apprenticed himself to a practicing attorney and acquired his whole knowledge of law from what he could learn in the office and in the courts. At the present time hardly anyone would think of studying law in this way. The opportunities in law schools are so much greater than they can possibly be in a lawyer's office that the legal aspirant now attends the former where he can get a diversity of knowledge that is utterly impossible to gain from one attorney. In like manner young men who desired to become physicians studied with a physician, were quizzed by him and practiced with him for a number of years until they were deemed worthy to practice by themselves. At the present time no young man studies medicine in this way. It is impossible for any one practitioner to give the young medical student all the things which he must have in order to pass the State medical examinations and to practice on his own account. This diversity of training, and especially the laboratory practice now necessary, can only be obtained in a school.

Fifty years ago it was thought by most people that engineering must be studied in a similar manner; that a boy must work with a civil engineer or with a mechanical engineer or go into a mine in order to learn anything about the profession. To-day

the great majority of students who study engineering do it at a technical school because through the breadth of the courses and the opportunities in the laboratories they are able to secure a broad training which can not possibly be obtained in any other way. Not long ago business men would have laughed at the idea of teaching business methods and principles in school and yet to-day hundreds of young men in Wall Street offices are studying business in school, and are taught by college professors. To-day many manufacturers believe that trades can not be taught in school, but I think it is safe to predict that in the future we shall teach all trades in schools and teach them as thoroughly as they are now taught in the shops which give apprenticeship courses.

Up to the year of 1862, the schools in the United States where an engineering education could be obtained were few and had a limited number of students. Not many of these schools had a four years' course and the curricula were very meagre as compared with what they are now. Nearly if not quite all of the work was in the line of civil engineering. In 1862 Congress passed the Morrill bill which provided for the "endowment, support and maintenance of at least one college in each State where the leading object shall be, without excluding other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts." This was a wise and far-sighted measure. Up to that period few, if any, of the colleges in the United States required any science for entrance; most of them gave very little scientific instruction, and almost without exception there was no laboratory work in any science. A measure which, in spite of this practice on the part of the colleges, required instruction in agriculture and the mechanic arts, thus providing for strong courses in applied science, was almost revolutionary and in the light of recent events must be considered as dictated by the highest wisdom. By means of this measure the State universities then in existence established agricultural and engineering courses and many State universities have since been established with these courses as a part of the regular curriculum. The term "mechanic arts" has been interpreted in most cases to mean "engineering or scientific education."

The demand for men to originate methods and supervise construction, to apply science and natural laws to manufacturing, railroads, mines, and chemistry, was the impelling cause which led to the establishment of these courses.

Previous to the Civil War our development along most of these lines had been comparatively slow and the schools then established seemed sufficient to meet the needs of the slowly growing industrial arts, but during and after the war progress was so great that methods of education and training, which before had been sufficient, became entirely inadequate. The introduction of these schools not only opened a new era in education, but also brought into the field of industry many men with such preliminary training that they could make rapid progress in the industries with which they were connected.

The growth of these institutions has been very rapid. In 1862 there were but six of them in existence and the total number of students was not more than 300. At the present time there are over 100 engineering schools and the total number of students is about 25,000. Some of these schools are privately endowed and teach engineering only. Some are engineering departments in privately endowed universities and some are definite parts of State universities. The courses and methods of instruction in all of them are essentially the same and hence they may be discussed together.

The problems which these schools have had to meet have been new and difficult. They are professional schools but their work has been much harder to organize than that of most such schools. Schools of law and of medicine take students either from the high schools or from the colleges but in either case they do not have to attempt to give a broad education nor to teach those subjects which are usually taught in college. They may, therefore, devote their whole time to the special subjects in which it is their province to give instruction. But the engineering schools are on an entirely

different basis. The great majority of their students are high school graduates, but before they can comprehend the professional subjects which they wish to learn, it is necessary to give them instruction in higher mathematics, English, college chemistry and college physics, and in most cases it is deemed necessary to give instruction in at least one modern language. The time, then, devoted to purely professional work is not as long as in the case of other professional schools. It has been difficult to preserve a proper balance between subjects which are sometimes considered as purely cultural and those which are distinctly professional. In making up the curriculum it has been necessary to keep in mind what the graduate will be required to do, and the qualifications for success. Engineering education does not produce engineers. It merely gives to young men that thorough fundamental training which will enable them to become engineers after they have had a few years of practical experience.

An eminent engineer, who has been at the head of a great industrial establishment, has said that the engineer of to-day should be accurate in his calculations, thorough in his investigations, logical in his deductions, lucid and concise in his statements. He should have untiring energy, an alert mind, an abundant initiative, and reasonable self-confidence. He should be absolutely honest in all his dealings, truthful in all his statements, loyal to his clients, faithful to his employer's interests, considerate of his subordinates, diplomatic in his negotiations and tactful in all of his relations. While the college can not give a man all of these qualifications it is evident that it can assist in the development of many of them and can show the student the necessity for all of them. To accomplish these results the student must learn certain things; he must learn where to find other things, and he must learn to use in the best possible way both his present knowledge and that which he will hereafter obtain. It has been exceedingly difficult to determine just what things the student should learn.

One of the gravest problems which technical education has to face to-day is whether the student shall be given a broad general training or whether this training shall be somewhat limited and the courses become highly specialized. Those who contend that a broad general course should be given believe that such a course is the proper foundation, not only for that general culture which is so beneficial to every man for his own satisfaction and in his relations to others, but for all future intellectual progress. They believe that this broad foundation should be the basis of all engineering work and the man who has it is able to take up any subject and rapidly become skilled in it whether he has studied it in college or not. They contend that it is far better to give this broad training with very little specialization than it is to cover a large number of subjects, which may be of special practical value, but for which a man is unprepared because of lack of the proper ground work. It is particularly advantageous, the advocates of this method say, for a man to finish a general college course before entering a technical school. During his college course he learns how to study; he decides upon his future career; he perfects himself in language, in mathematics, in English, which are especially advantageous to him in engineering studies; and his mind is developed to such an extent that he can meet the problems which will come up in the engineering school or in engineering practice, with far more ease and ability than can the student who has merely had the professional training. There is also some difference of opinion in regard to the course which shall be given to students who go directly to the technical college from the high school. In some institutions special stress is laid upon mathematics, physics, chemistry, drawing, and mechanics and they are pursued during the first two years and a part of the third year. These subjects are the foundation of engineering work and it is argued that they should be carried so far that the student can readily go on with the special subjects that he may wish to take up and comprehend their relation to all scientific and engineering phenomena and practice.

On the other hand, the advocates of the specialized courses would give a moderate amount of the subjects named above, and would then permit the student to specialize

so that he may determine while in college whether he will become a sanitary engineer, a railroad engineer, a shop superintendent, or an analytical chemist, etc. It is claimed by those who favor this method that specialization has reached such a point that a man, to succeed, must give his attention to one narrow branch of work—that the college is the place for him to study the theory of his specialty and to obtain so much laboratory practice that he will readily become expert in his branch after he leaves the institution. Our engineering schools are divided between these two theories. In a few of our universities the engineering work is a post-graduate course, but in the great majority of our technical schools students are admitted directly from the high school. The future must decide whether those who first finish a college course and later take up the professional courses in engineering will succeed better in engineering practice than those who have had the more limited education.

As to the more prominent divisions of engineering education which should be pursued there is very general accord. These divisions are civil engineering, mechanical engineering, electrical engineering, mining engineering, and chemical engineering. A few institutions offer but one of these courses, while the majority of our colleges offer all of them. Each course comprehends a number of subdivisions and every year sees an addition to this number. In the early days of engineering education, civil-engineering was the only branch taught. Later the development in the manufacture of machine tools and steam engines necessitated courses in mechanical engineering. For some time after the application of electricity to practical things, this subject was taught as a part of mechanical engineering but within the past 25 years almost every institution offering engineering courses has provided a special course in electrical engineering. The subject has become so complicated and there are so many ramifications which extend into the industries, that it can no longer be classed as a part of some other department but demands a place of its own. Mining engineering courses have always been divided into mining engineering and metallurgical engineering, while chemistry, which was formerly merely an analytical subject, has now united with engineering processes and developed into a chemical engineering course. It is an exceedingly difficult thing to decide what subjects shall be taught, for the number of them increases with great rapidity, and if all are to be given the prominence which their advocates expect, our engineering courses will have to be extended from four to six or even eight years.

Laboratory work has always been an essential part of engineering education. Before 1865 hardly any American college gave laboratory work, even in chemistry. From the first the engineering schools have insisted that practical application should accompany theory in every subject. The engineer's work is essentially practical—he must do things, and he can not learn to do things by simply studying theory. The latter must be connected with practice so that the laws upon which theory is founded may be used to accomplish engineering results. At the present time every engineering school has extensive laboratories, not only in the sciences, some of which are the basis of engineering, but in the engineering subjects themselves. It is on account of the training which the student receives in the laboratory that he is able to apply natural laws and scientific methods to the work which he will take up as soon as he graduates. Perhaps in some institutions the laboratories are too extensive; perhaps too much detail is insisted upon in some branches, but the principle of the application of the theory is an essential one in engineering education and has been largely responsible for its rapid development and for the success of those who have pursued it.

But no matter how many subjects we teach, there are always some which can not be taken up by any student. The student who has specialized in one subject in the engineering school may find himself pursuing an entirely different line of work after he graduates, or he may find that in his own specialty there are developments which were not known at the time when he was a student or for which he did not have

sufficient time when he was within the college walls. It is evident, then, that every engineer after he leaves the college must use many things which he did not learn when in college. For this reason it becomes important to teach him where to find things which he does not know. Engineering books, encyclopedias, the reports of societies, engineering magazines, all contain a vast amount of material which may be of use to an engineer, and in fact, must be used by him from time to time in order to carry out the most recent practice of his profession. To a certain extent the use of this material is mentioned in the engineering school. It has always seemed to me, however, that this development has not reached that point which it should, for a student ought to learn where to find anything within the realm of knowledge. If he has not done so there is much which is known to some one but which is hidden from him. It is evident to every thinking person that the successful man must use what others have done, and that college, which has taught the student where to find anything that he may need, has given him a most important part of his engineering training.

But knowledge, whether in the memory or hidden in books or periodical literature, is of no benefit to the engineer unless he has been taught how to use it. The most important thing which the engineering schools are trying to do is to teach the students to think—to see the connection between what they know or what they may find out and the special problem which has come to them for solution; to determine not only how to do a thing, but to do it in the best way from an engineering standpoint; to do it in the way which will succeed commercially as well as scientifically. It is much easier to hear a man recite or to lecture to him than it is to teach him how to use the thing which is being presented. There are no general courses on thinking; there are no perfected rules of initiative; there are no known methods of teaching common sense. These things come to a student through his own study; from his own thought. He must be gifted with certain faculties of mind if he is to use to the greatest advantage those things which the engineering school presents to him. The school may help him to develop these faculties, and every course properly presented does assist in training them, but no professor, no laboratory, can create these faculties.

Engineering education means four years of discipline. In its highest development this is mental, moral, and physical. The mental discipline I have endeavored to describe; the moral discipline stands out in every recitation, in every laboratory course, in every instructor. If science and engineering teach anything, they teach the student to look for the truth and to be satisfied with nothing else. They teach him to shun the shams, to have no preconceived notions, to look at both sides of every question, and to accept in his engineering work only that which can be proved. Such teaching as this strengthens the moral fiber in any character and reacts upon every phase of the student's life. Although sometimes unwritten, there is a code of professional ethics in every branch of engineering which the engineer must live up to if he is to be at peace with his fellow workers. Unfortunately we can not enforce such a code of ethics by law as is done in some foreign countries, but the opinion of the profession at large has done much to prescribe honest practice as between engineers and between the engineer and his client.

Physical training should be a part of engineering education, and usually is because health is fundamental to any successful career. Too often physical education has meant athletic development of a few instead of the training of the body for the many. In many of our colleges, perhaps in the majority of them, instruction is given in hygiene, and physical exercise is required every week if not every day. The student thus learns how to take care of his body—how to ward off those diseases which it is in his power to prevent, and how to keep his system in that perfect physical condition without which it is impossible for him to meet most successfully the competition which comes to all men in these strenuous years.

In order to accomplish the things which I have mentioned as essential parts of an engineering education, it has been necessary to select for the faculties of these institutions men who are not only well educated in the theoretical parts of engineering,

but who have had sufficient practical experience so that they can speak with authority upon the subjects which they teach; it has been necessary to require a high standard of admission in order that time in the engineering schools may not be given to elementary subjects which should have been learned elsewhere; it has been necessary to lay out courses of study which will train the mind as well as the memory, and it has been necessary to fix requirements of graduation which will prevent the unprepared, the weak, the lazy, the indifferent student from securing a degree which will open to him a professional career.

The schools which offer an engineering education are essentially teaching institutions. They have always considered that their chief duty was to instruct their students; professional work and scientific research have been secondary in all of them, although a large amount of both has been done. Professional work is necessary in order that the engineering professor may keep abreast of the times and may show his students the latest practice in the profession. Scientific research is desirable because the trained minds of the college faculty should seek to advance scientific knowledge and make that knowledge available, not only to their students but to the world.

Engineering education has been a matter of growth and development since the earliest engineering school was established. It has sought to meet the changed methods of the times; it has broadened its course of study as the necessity arose; it has added one subject after another to its curriculum in order that it might keep pace with engineering progress. It has sought to prepare young men to enter the engineering profession at the foot of the ladder, but to give them such training that their upward progress would be rapid. It has sought to make men as well as engineers, good citizens as well as professional workmen. Its work in the future must be along the same lines. It must continue to make fundamentals the basis of all its instruction; thoroughness and accuracy must be its watchwords. If it studies the demands of the times and relies upon professional engineers for advice and assistance, it will continue to turn out a product which will be in demand, and hence the youngest of all the learned professions, engineering, will receive each year a new lot of recruits, able and intelligent and eager to advance the progress and the civilization of the world.

The CHAIRMAN. Another subject which is of great interest to the three combined sections is that of standards, and Dr. Van H. Manning, Director of the Bureau of Mines, will present a paper on the "United States Bureau of Mines."¹

The second of the papers on the subject "What is engineering education contributing toward scientific progress and invention" is by Prof. Vladimir Karapetoff, of Cornell University.

WHAT HAS ENGINEERING EDUCATION CONTRIBUTED TO SCIENTIFIC PROGRESS AND INVENTION?

By V. KARAPETOFF,

Professor of Electrical Engineering, Cornell University.

In answering this question one has to consider not only the work actually done in technical colleges but also the work of their graduates. The discussion is divided under the following topics:

- (1) Undegraduate students.
- (2) The practicing engineer.

¹ Paper printed in Volume VIII of the Proceedings of the Second Pan American Scientific Congress.

- (3) Advanced and post-graduate students.
- (4) Invention as a type of graduate work.
- (5) The faculty of the school of engineering.

I. UNDERGRADUATE STUDENTS.

The instruction of undergraduate students in engineering usually has several aims, such as—

- (a) To impart a systematic knowledge of the most important types of machinery, structures, and processes in use;
- (b) To explain the action of such machinery, structures, and processes in terms of physics, chemistry, and mechanics;
- (c) To enable one to design, build, develop or operate similar structures and processes;
- (d) To give a training in applied economics, law, and social problems, in so far as they enter into industrial life;
- (e) To give a training in the student's mother tongue, so that he may express at least his professional ideas clearly, forcibly, and with some elegance.

There are other equally important sides of undergraduate training which are unfortunately overshadowed by routine professional studies or lack of time. Let a student's mental, moral, volitional, and physical shortcomings, deficiencies, and inabilities be called his "valleys," while the corresponding strong sides in his personality be called his "peaks." Then the great educational problem, far greater for the welfare of the race than the mere professional training, is to fill the valleys and to raise the peaks. This is a difficult problem, for it requires that a college give no little attention to the individual undergraduate, so as to remove the worst faults in his personality and to develop his stronger propensities to a high degree.

And yet it is precisely this kind of work that would enable higher institutions of learning to become more potent in industrial progress and invention. One who aspires to any place of prominence in such progress must satisfy at least two fundamental conditions:

He must be exceptionally gifted and well-developed in some one kind of work, and he must not be obviously deficient in any important mental, moral, or volitional quality nor lack physical endurance.

Is it not time to awaken to the fact that our industries are much in need of leaders in engineering, in addition to a large army of engineers doing routine work, and that the time to choose such leaders is in their undergraduate days? A few who show traits of mental superiority in college should be encouraged not merely by high marks, prizes, and membership in honorary societies, but by an opportunity to exercise their superior abilities as designers, inventors, organizers, or scientific investigators. A wise king gives his first-born a training different from that of his other children and his courtiers' children, because his heir is destined for leadership.

I know it may be said that all undergraduates in engineering ought to undergo certain fundamental disciplines, that there is no short cut to success, that the best engineers must serve their apprenticeship, and that colleges can not provide separate courses or problems for geniuses or "near-geniuses." But I affirm that these are really minor considerations which should give way before the great advantage of having especially gifted young men guided into their proper lines of activity from the outset. If it is found expedient to canvass preparatory schools and high schools for promising athletes, so as to induce them to enter this or that college, how much more fitting it should be for institutions of learning to find, to preserve, and to cultivate a few who later are likely to contribute to scientific progress and invention.

If not all technical schools can do it, at least let a few well-endowed and well-equipped ones make a specialty of developing leaders in engineering. In some European countries, in which national defense is of particular importance, there are ad-

vanced military academies which are intended to develop special experts for the general staff. Only the best young officers of proven ability are admitted there; they receive a training for leadership and are later appointed to positions of responsibility—ahead of their classmates, who have to wait through long years of routine life and slow advancement in their regiments.

If, for instance, thermodynamics is especially easy to a student, and if he seems to show a quick perception and mature judgment in it, do not allow him to lose interest in it by requiring him to take the course with the rest of the class, doing all the easy problems, passing the preliminary examinations with a mark of 100, and perhaps finally even losing his respect for the subject. He may be a future Carnot, Rankine, or Diesel; therefore encourage him to take a special experimental or theoretical investigation, *in place of the course*, and trust him to acquire the fundamentals while studying for his problem.

This is but one of the possible ways by which young men of exceptional ability may be chosen and directed, under proper guidance, in their training for engineering leadership and for scientific progress and invention. A technical college that decides earnestly and systematically to engage in this work will find many ways in which gratifying results may be accomplished.

II. THE PRACTICING ENGINEER.

A teacher of engineering subjects—one who has taught for several years—can usually point with satisfaction to at least one of his former students who is not doing routine duty or striving for a lucrative commercial and managerial position, but is investigating some field of pure or applied science or is developing some invention. How much credit is due to his college and his teachers for his achievements? Consider a piece of rare wood in an artistic piece of cabinet work. This piece of wood undoubtedly possessed a certain desirable fiber and pattern when it was chosen, but it had to undergo several processes in the hands of experts before its full beauty could be brought to light.

So our engineer has to thank his education for several qualities which are of importance in science and invention. He has received a training in logical reasoning as applied to natural phenomena; he has been taught to experiment in physics and chemistry, and is familiar with engineering laboratories; he has had opportunity to develop manual dexterity in the shops, and he has been shown how to apply mathematics to practical problems. What is, perhaps, most important of all, he has left college with some idea of what science and invention have contributed in a material way to human welfare, what the next important problems are, and what may be the general method of their attack. He probably has come away with an inspiration to solve one or another advanced problem, and, under favorable circumstances, he has developed into a worthy laborer in the field of science and invention.

Speaking of favorable or unfavorable circumstances after graduation, one is involuntarily reminded of the parable of the sower, the seed, and the different kinds of ground on which it fell. Is it not true that, after the tender care and generous consideration received by an undergraduate, he suddenly finds himself in the rough, unfriendly atmosphere of factories, offices, and construction camps, like a good seed that has fallen upon stony ground or among thorns? Who knows how much good seed sown in technical colleges is thus choked, or is eaten up by birds of passage, and how many worthy ideals are shattered because of greed and ignorance in handling men in our industrial life.

Perhaps the colleges of engineering are not altogether to blame if the output of scientific workers and inventors among practicing engineers is not so large as it ought to be. Of course, a strong, determined soul survives, and carries its aspirations unabated through the first few years of struggle after graduation. Hence the importance of a

training in the fundamentals of the profession, and of a general training of the character, that will enable one to carry over until one finds a place in the world to which his talents and training entitle him. Nevertheless, the struggles of a young practicing engineer are often pathetic, and the heart of many a teacher overflows with pity while he watches the souls and the careers of some of his most beloved students who are mercilessly ground in this gigantic mill—of which Moloch himself turns the crank.

Employers of engineers, technical, and scientific societies and the press, manufacturers' associations, and the local and national governments, these are among the powers that ought to do more to stimulate practicing engineers to scientific research and invention, by suggesting problems and by offering facilities, and in some cases rewards. An industrial society in Alsace each year publishes a list of engineering problems the solution of which is of importance to their district, and offers prizes for the best inventions. In this country the only lists of this kind that find a wide circulation among naïve inventors are those contained in the baiting booklets of a certain type of patent lawyers.

III. ADVANCED AND POSTGRADUATE STUDENTS.

The problem of the advanced and the postgraduate student in engineering is quite different from that of the undergraduate. Here we should expect to find a mature man who has been out of college for at least one year, one of marked ability, who returns to an institution of learning in order to specialize in a narrow field of knowledge and to make at least a slight original contribution to this branch. Now and then such a man is found in the postgraduate departments of colleges of engineering, but in point of fact the large majority of postgraduate students fall short in their preparation, with the result that most of their time is spent in making ready for the advanced study or research for which they came. The problem is further complicated by the fact that virtually every postgraduate student in engineering desires to take some elementary work in a subject for which he had no time as an undergraduate, or the importance of which has later dawned upon him.

Another aspect of the situation which we must face is that those who come back for postgraduate work are by no means the best young engineers, nor are they those best suited for research.

Young men with initiative and with the true instinct of engineering, capable designers, operating men, specialists in construction, and general "hustlers," soon find congenial, if not lucrative, employment, and work out their own problems without the help of colleges. On the other hand, those who come for special research are sometimes men without initiative, who come back into the congenial collegiate atmosphere for guidance by teachers. No wonder that their theses bear witness to their patience rather than to theoretical or practical value. But perhaps many must be called in order that a few may be chosen who actually can contribute to the advance of applied science and the multiplying inventions.

Dean James E. Creighton, of the Graduate School at Cornell University, sees a real danger in the fact that not enough men of energy and of highest intellectual endowments are attracted to graduate work, and he considers the problem of recruiting such men to be one of the most important educational problems that confront the universities of the country at the present time. The following paragraph from his report is well worth quoting:

"From the students who are at present in the graduate schools of the country the future supply of teachers in the higher institutions, as well as of investigators who are to carry on the work of advancing knowledge, will be largely recruited. This fact renders it of great importance, not only that the best opportunities should be afforded to these students for adequate preparation for their work but also that the students themselves should possess the proper natural qualifications. There is a real danger at the present time that the profession of teaching and the work of investigation and

scholarship may fail to attract its fair proportion of the best brains of the country. This danger should be recognized and steps taken to meet it. It scarcely needs to be pointed out that work in these fields is of the greatest social importance, and that there is urgent need for men of energy, devotion, and the highest intellectual and moral endowments to carry it on. The question of recruiting for the graduate school, accordingly, is one that should occupy the attention of all who are interested in higher education and in social progress. The subject is too large to be more than mentioned in this report, but it is perhaps the most important educational question that confronts the universities of the country at the present time."¹

While Dean Creighton has in mind all branches of knowledge taught in a large university, his words apply with equal force to engineering subjects, and I quote him as a warning to those to whom research in engineering and allied disciplines is dear, and who perhaps overestimate its present direct value to the profession.

On the other hand, this quotation is not intended to be an unjust censure of the large body of graduate students who, with rare exceptions, apply themselves faithfully to their tasks. They afterwards invariably express the opinion that the experience has been profitable and inspiring, and that they wish they might come again and receive more. Thus, there is a great indirect value to the scientific progress in the endeavor of these scores of young men who annually obtain the master's degree in engineering, and who thereby gain a much deeper insight into the methods of study and research, and a further inspiration through some one problem.

It is hardly necessary or desirable at present to try to deter all who attempt engineering research without being fit for it. What is necessary is a better organization and adaptation of postgraduate work in engineering, not blindly patterned after the much older graduate research in pure sciences and in the humanities, but newly conceived so as to promote progress in applied sciences and to facilitate invention. This is an age of cooperation, and the graduate work must be cooperative in order to be of real value. The technical problems of the age are too large and involved to be handled even one at a time by a man of experience, let alone by an immature beginner in research.

When the United States Bureau of Mines decides to develop means for protection against explosions, or fire-damp in coal mines, or when the Department of Agriculture undertakes to fight some pest or parasite, it is not an individual problem for Smith, Jones, or Brown to solve, but the intellect, the knowledge, and the skill of many specialists are combined, and while individual men may come and go, the work is carried on through a period of years until the problem is solved.

In a similar way institutions of learning which have adequate facilities for systematic research in engineering should encourage their graduate students to pursue along a few definite paths, following the same topics year after year until results of real value to the profession are obtained. Individual graduate students should contribute to this research whatever they can, some devising more accurate methods of measurement, some searching out what has already been written so as to correlate what has been done, some building or improving apparatus, and others developing a theory of the observed phenomena or interpreting them. A good beginning in this kind of research in engineering has been made at the University of Illinois, with which a State experiment station is connected.

The following quotation is from a paper by Prof. Ellery B. Paine, entitled "The engineering experiment station of the University of Illinois," published in the 1915 proceedings of the American Institute of Electrical Engineers, page 2421:

"The engineering experiment station of the University of Illinois was established by action of the board of trustees in December, 1903. It was organized as one of the auxiliary scientific bureaus of the university. Its purposes are the stimulation and elevation of engineering education and the investigation of problems of especial

¹Twenty-third Annual Report by President Schurman of Cornell University, 1914-15, Appendix II, p. IX.

importance to professional engineers and to the manufacturing, railway, mining, and industrial interests of the State and country. The station is conducted as an institution of scientific research rather than as a commercial testing laboratory. Investigations are chosen which promise information of fundamental importance in the particular field. No researches are undertaken with the object of obtaining information of chief value to some individual or company. The results of the investigations that yield data of scientific value are given to the public in the form of bulletins.

"The control of the station is vested in the station staff, which consists of the director and the heads of the 10 departments of the college of engineering. Research is made in architectural engineering, chemistry, ceramic engineering, civil engineering, electrical engineering, mechanical engineering, mining engineering, municipal and sanitary engineering, physics, railway engineering, theoretical and applied mechanics. The investigations are conducted under the supervision of the staff by members of the instructional staff of the college of engineering, by experiment station special investigators, and by experiment station research fellows. There are 103 members of the instructional staff in the college of engineering. They must devote the major portion of their time, while the university is in session, to classroom duties, but each is encouraged to take an active part in some research. There are nine special investigators. They have no duties connected with student instruction, but give their full time to station work. They are experienced and skilled research workers. There are 14 research fellows. The fellows devote half their time to station work and half their time to study in the graduate school of the university. They are graduates of approved technical schools and universities who have shown ability for experimental work. Fellows are appointed for a term of two years and it is expected that at the end of that period they will be eligible for the degree of master of science.

"The laboratories of the university are available for the investigations of the station. In addition to the equipment used largely for student instruction the laboratories contain apparatus designed especially for research work."

Prof. Paine emphasizes in particular the importance of researches which have developed into a series of investigations of different phases of large problems, and which have already led to changes in engineering practice.

No doubt the success of this station will stimulate other State institutions and large privately endowed universities and technical colleges to organize similar centers of research and invention. It is to be hoped that the work in such institutions will be conducted on a national or even international scale, and that the needless duplication of effort and equipment, so deplorable in this country, will be avoided. The time is ripe for the representatives of graduate work in engineering to come together and in cooperation with representatives of professional societies and of technical bureaus of cities, States, and the Federal Government, to elaborate a comprehensive cooperative scheme for the promotion of invention and of scientific research in engineering.

A commendable and promising step in the direction of a closer cooperation between industries and colleges of applied science must here be mentioned, namely, the founding of industrial scholarships and fellowships in different technical schools by various manufacturing and other concerns and the like, for the investigation of definite practical problems. Much credit in this respect is due the late Dr. R. K. Duncan, through whose effort such fellowships were endowed at the University of Kansas,¹ and who later cooperated in the formation of Mellon Institute of Industrial Research and School of Specific Industries in Pittsburgh.

Useful industrial investigations of a similar character are now carried on at the Massachusetts Institute of Technology; for instance, the lately completed investigation into the comparative cost of delivery by gasoline and electric trucks. Industrial work either of an immediate practical character, or of a semiscientific nature that may become useful in the near future, is also maintained in other institutions of

¹ Science, vol. 35, p. 19, 1912.

learning; but much organizing and pioneering remains to be done before the standard and the amount of the engineering research in this country will even approach that done in Germany.

IV. INVENTION AS A TYPE OF GRADUATE WORK.

The results of scientific research in engineering when followed to their practical conclusions often lead to new or improved machinery, structures, or processes. In other words, theoretical investigations lead to inventions. This latter aspect of technical and scientific progress has been neglected by colleges of engineering, and a large and fruitful field awaits schools which are qualified and willing to engage in teaching graduate students how to develop inventions.

Perhaps one of the reasons for which invention as a discipline is not cultivated in colleges lies in the common misconception as to the nature and place of invention in modern industry. Many people, who ought to know better, still think that an invention is a radically new and wonderful thing that comes like a flash out of the mind of a specially endowed being, that is, an inventor. In point of fact, hardly one out of a thousand patents granted represents a radical departure in apparatus or process. Most are but "new and useful improvements," developed by systematic observation, logical thinking, and a bit of ingenuity combined with a general knowledge of mechanics, electricity, physics, or chemistry. We certainly have no right to deny such ability of knowledge in our postgraduate students or in the faculties of colleges of engineering.

Patented machinery, apparatus, and merchandise, and patented processes represent such an important element in our industries and even shape and give a peculiar character to so many industries, such as the manufacture of shoes, that no technical college may be said to serve truly the industrial progress of the times if it does not give its students at least some idea of the nature of patentable inventions, and of the process by which they are systematically developed. The Federal Government, which is maintaining research of a valuable sort in its scientific bureaus, has of late made possible a number of important inventions there developed for the benefit of humanity and freely divulged for general use. Perhaps the inventions of Col. Squire in telephony and telegraphy, and the process developed by Dr. Rittman for producing more gasoline out of crude oil, are among the best-known. There is no reason why similar inventions should not come in time as a result of systematic postgraduate work in out institutions of learning.

Another misconception in regard to inventions is that a patented article is one that possesses an ingenious trick which a man without education might accidentally discover; for instance, the much-quoted case of the eraser attached to the butt end of the pencil. But what about the recent production of the nitrogen-filled incandescent lamp, in the development of which some of the leading chemists and physicists of the country took part, at the research laboratory of the General Electric Co.? This new lamp represents a case where the latest achievements of the electron theory and of the statistical molecular mechanics were used in the development of a useful practical device, and where at the same time pure theory advanced in the very search to improve the performance of the lamp.

Colleges need not think that they would be lowering their standards, or catering to the temporary or mercantile needs of industry, should their post-graduate students be working on useful inventions instead of wasting time on all kinds of precise measurements, computations, or exercises which in most cases lead nowhere and are of use to no one.

Some time ago a student came to me and asked me to suggest some suitable investigation. I asked him if he could play the mandolin, and upon his affirmative reply I outlined a scheme whereby a pick could be driven by a small electric motor, so that a person would not have to develop the dexterity of his right hand, and yet obtain an

even and almost continuous sound. He was almost offended at this suggestion, for he felt that he would be ashamed to tell other students the subject of his work. In vain did I point out the commercial possibilities of the scheme, and the interesting mechanical, electrical, and acoustic problems involved. He wanted a high-sounding name for his thesis, something like "The effect of traces of ytterbium upon the specific resistance of tellurium at the temperature of boiling praseodymium."

Finally I persuaded him to begin the work on the mandolin, and he was astonished at the number of most interesting and difficult problems, both theoretical and practical, which had to be solved from the very beginning. He left the college long before he obtained any satisfactory tone from an electrically-driven pick, but he told me that he learned more from this work than from all the college courses combined. What he really meant was that several laws and statements in physics, mechanics, machine design, and electricity, became clear to him when he applied them to the definite problem in hand.

In only a few cases have I succeeded in persuading students, either undergraduate or post-graduate, to take up a problem that was in the nature of invention or of a search in the patent records. They were diffident, and somewhat ashamed, partly perhaps because they feared teasing from their classmates, and partly because they somehow felt that developing a practical improvement in apparatus was not on a par with so-called research.

It is to be hoped that this attitude will soon give place to a more rational view, and that we may see in connection with our technical schools graduate departments chiefly or exclusively devoted to a scientific and systematic development of inventions for the benefit of humanity at large.

Every one agrees that inventions are stimulated by scientific progress, but it is time to see that scientific progress is in turn stimulated by invention.

V. THE FACULTY OF THE SCHOOL OF ENGINEERING.

The faculties of our engineering colleges contribute to the progress of applied sciences in two ways: (1) as teachers who impart and disseminate knowledge, and inspire their students for further research, and (2) as original investigators and inventors.

The only limit to a teacher's usefulness and achievement in the first respect is his unselfish desire to serve and to inspire. Assertions are often made as to the lack of equipment, insufficient number of hours allowed for a course, overcrowding of the curriculum, poor text books, and lack of preparation or interest on the part of the students. The complaints, while to some extent justified, are hardly sufficient, even in their entirety, to reduce the usefulness of a truly great teacher to nothing. From ancient times, through the Middle Ages and as late as to be within our memory, men and women flocked to hear great teachers, listened to them in the open air or in the stifling atmosphere of primitive lecture rooms, worked in dingy and dark laboratories, with crude apparatus, without text books, without much preparation, and not caring about credit or diplomas. We are fortunate in this age in that most of us teach under much more favorable conditions of sanitation, schedules, and apparatus. But can all these material improvements take the place of a deep, genuine, first-hand knowledge of the fundamental phenomena of nature, of an originality and keen analysis, of a sincere love toward one's students, of a life that is an example and an inspiration to them, and of eloquence that is born of supreme devotion to a noble cause?

Nor is this ideal impracticable for one who teaches the steam engine or the chemistry of foods. Because a teacher in applied science must be well informed upon the practical side of his profession, or because of necessity he comes in contact with the commercial and administrative side of the industry, should his soul be polluted, and should his power of spiritual vision be limited to preparing men for subordinate positions? The function of the engineer is to satisfy the material needs of humanity

in the most perfect and economical way, so that more leisure may be given for all those things which the best men consider worth living for. The form in which these needs are satisfied at present may be imperfect, but this is only so much more reason why the teacher should prepare men inspired and competent to bring light out of darkness.

There are many other problems of the teacher of engineering the discussion of which would be out of place here. There is in this country a Society for the Promotion of Engineering Education, which through its various committees, its individual papers, and its discussions tries to elucidate and to improve the various aspects of instruction in engineering subjects.

Let us, then, finally consider the direct contribution of teachers in engineering to scientific progress and invention, with their desire and ability for study and research. One who stands far from the educational world might naturally reason somewhat as follows: Here are teachers of engineering chosen for their eminent fitness to instruct young men. They have the fundamentals of the subject at their fingers' tips, and they are supposed to teach the students to think logically, consequently they themselves must have fair ability in reasoning. They work only a few hours a day, they have about four months of vacation each year, and they have libraries and laboratories to help them in research. They talk about scientific progress, and they urge their students to do reading and research. Why is it, then, that apart from textbooks and compilation, the contribution of teachers in engineering to scientific progress and invention is comparatively small and of no very high grade.

I know that names may be easily quoted of professional teachers in civil, mechanical, electrical, mining, and chemical engineering, who are, or were, prominent as original investigators and important inventors. But the facts remain that if one looks over the files of the national engineering societies and the leading magazines, one finds that the most important contributions are from the pens of practicing engineers. This is to be expected in so far as the description of actual structures, machinery, processes, and products is concerned, but in many cases the important contributions to the working theory are also made by men in engineering practice, and not by college professors.

Rather than to close our eyes on this seeming anomaly, let us look frankly into some of the reasons for this state of affairs.

1. A good teacher in elementary subjects is not necessarily an able investigator in the advanced and new parts of his subject. At least three-quarters of the instructors and professors in our technical colleges do little but elementary undergraduate teaching; they hold their positions because of their knowledge of the fundamentals, their expository ability, pleasing personality, and clean personal life. Their direct contribution to scientific progress is practically nil.

2. A number of professors in engineering and applied chemistry who are learned men contribute little that is new to their profession because of a peculiar type of mind. Their intellects are critical, classifying, analyzing, and sympathetic with great original minds, rather than creative or prophetic. They read and ponder over all important original contributions to their subjects, they analyze the worth of these contributions, placing each where it belongs in the scientific progress, and they encourage original thinkers by an early appreciation of their work, and popularize methods and results in clear articles or addresses. The part which such professors occupy in scientific progress and invention can not be denied. We need impartial classifiers to separate the wheat from the chaff in the great mass of printed matter that appears every day. The man on the street, and industry, too, need them because they bring the recondite results of scientific research in an accessible form. Original investigators need them for encouragement, advice, and reference, and as early, patient readers of their work.

One is reminded in this connection of the friendship between two great musicians, Richard Wagner and Franz Liszt. Wagner was a bold original mind in the domain of music, an innovator misunderstood and not appreciated. Liszt was a man of broad sympathies, and while not a genius or an original composer himself, he under-

stood Wagner, admired him, helped him both in a pecuniary way and by performing his works. It has been said by more than one student of their lives that if it had not been for Liszt, we should have no Wagner.

3. The atmosphere of an average technical college, while propitious for study, for bibliography and compiling, or for purely theoretical investigations, is not as favorable for industrial research and invention. One often meets teachers capable of such work, and willing to work, who, separated from the real problems of industry, either do nothing or waste their time on problems that are worthless. All agree that it is highly desirable for the teachers of engineering to keep in touch with the industries, but how to achieve this end, especially in colleges at a distance from industrial centers, is a difficult problem, and one outside the scope of this paper.

The importance of organized research and invention in colleges of engineering has been pointed out. In colleges in which efforts of this kind will be carried on, and ample funds be available for experimental work, teachers who are capable of original research will find their true place, and will become not only contributors to real scientific and technical progress, but will also train to the same end scores of talented young engineers, physicists, and chemists.

4. While it is true that the number of hours of actual teaching in a week is not nearly so great as the number of hours of work done by a practicing engineer, the work of instruction is much more trying and fatiguing. Moreover, a teacher has a number of other duties of which an outsider has no conception, but which take several hours of his time daily. He has to correct numerous problems and reports, to prepare new problems and select data, to write or mimeograph notes and directions, to prepare for recitations and lectures, to arrange apparatus for demonstration, to keep office hours, to attend faculty meetings, to do committee work, to attend to certain administrative duties, to look over new textbooks and important contributions in his specialty, and to answer all kinds of inquiries that come from former students and from men who seek free advice. Many young teachers do tutoring or routine literary or commercial work to help to make both ends meet; others ill-advisedly write textbooks for which often there is no real necessity and no market. This is especially regrettable in young instructors, who should train their minds early in the advanced branches of their profession and in research.

Those who are familiar with the conditions say that the average American instructor in engineering has more routine duties, and more classes in a week, than his German colleague, and as a result is not contributing nearly so much to scientific progress. The situation does not seem to be getting better, especially in the privately endowed institutions in which the income is not keeping pace with the expenses. And if teachers are to receive higher salaries, as is universally demanded and sometimes promised, this can be done only by reducing their number and by further overloading the remaining ones, or by reducing the number of students.

Persistent attempts have been made of late to introduce into academic life the methods of "efficiency" borrowed from factory management. In some institutions records have been compiled of the number of "hours" or "student-hours" of teaching done by individual instructors, as if the work were of the same character as drilling holes or unloading pig iron. In one or two cases this attitude of the authorities has led to an open expression of disapproval from the faculty, as being inimical to the higher interests of scientific progress. Efficient the faculties must be, and work in their specialty they must do most of the time, if they are to be an example to their students. But to measure the work of noted teachers in "hours" or in "student-hours" is about as reasonable as to measure and to compare the output of prominent artists in square feet of canvas.

The author firmly believes that, after these drawbacks to the free and unhampered development of the members of the faculties of our engineering schools have been removed, professors of engineering will take a much more prominent part and perhaps even take the lead in scientific progress and invention.

The CHAIRMAN. We have now a paper of importance on the subject of degrees. The committee has selected a gentleman who has already done a good deal of work along that line of investigation. The title of his paper is "Significance of engineering degrees in the United States."

THE SIGNIFICANCE OF ENGINEERING DEGREES IN THE UNITED STATES.

By WILLIAM T. MAGRUDER,

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In university and collegiate circles, a degree is the official statement of an academic rank awarded by an incorporated or organized group of men authorized by a State or National Government for this purpose (and in some cases entitling the holder to certain legal rights and privileges). In business and professional circles, a degree carries the impression that the holder has satisfactorily completed a curriculum of study of some branch of human knowledge of a more or less advanced kind, and, in a few cases, that he has the governmental right to practice the specified profession, art, or business. It is evident that the significance, importance, and real meaning of the degree therefore depends upon the reputation and the standing of the institution which conferred the degree, the curriculum followed, and the grade of the degree. The unit of measurement for the significance of a degree, as it is applied by business men and employers, is the adaptability and success in their work of other persons from that institution who have possessed that degree. One failure to make good in the employment of some companies affects the reputations of the institution and of later sons of Alma Mater, as well as the man himself. It is but another illustration of the sins of the fathers being visited upon the children.

The time was when degrees were given by the teachers individually and each one signed each diploma which was conferred by them acting collectively as a faculty. Such a diploma had the force of a personal testimonial as to the proficiency, personal qualities, and adaptability for the work specified of the individual named, and was of the nature of a most formal letter of recommendation. Each recipient had been under the personal training, observation, and instruction of each of the persons who signed the diploma. They could therefore vouch for his ability from their own personal knowledge. Then, we made students and alumni; now, we manufacture them and grind them out as from a mill. Few people appreciate the labor of preparing and of signing 1,000 diplomas and the 4 to 5 hours of hard manual work required from each person signing them. Only a small per cent of the instructors have any personal knowledge of the students collectively, and still less of them individually. As specialists, they may be expected to know fairly well those students who have specialized and taken courses under them. The time was when the degree of Master of Arts meant what it said. Now it is a misnomer. Then, the student received his degree of Master of Arts; now, he gets an "M. A. degree." Then, he had mastered all the known arts; now, he may have a smattering of a very small part of one of the arts. Sixty years ago, to get an M. A. degree at one institution, it was required that a student should have merited all his work.

A degree is usually conferred when a certain definite and specified amount of work has been completed. The conferral marks the time when the recipient steps from the schoolroom of infancy into either the professional school or the world of practice and life. It emphasizes the starting point in serious life; hence, it is given on "Commencement Day." It should not be given for the completion of so many tasks, of the grind-

ing out of so many lines of Latin or German, or of making so many drawings, of running so many levels, taking so many indicator diagrams, or of recording so many readings and calculating the results. A degree should be conferred only when a certain stage in the training of the mind has been reached, rather than when certain tasks have been accomplished. The decision and the responsibility for the judgment rests wholly with the teacher and should be based upon his personal contact with his pupil. Unfortunately, this is not always the case, and persistency is not infrequently rewarded by a diploma, and success is insured because of the training in persistent effort which had been demanded.

The significance of a degree is a function of the institution and of the faculty granting the degree—of its equipment and of their ability. The name is secondary. Unfortunately, men who have earned a bachelor's degree in some institutions are unprepared and unable to carry successfully the work of even the second, or sophomore, year of institutions of the highest grade. This is true of degrees of all grades and kinds. Hence, the practice which has grown up of stating the name of the institution which conferred the degree when stating the degree, either orally or on title pages. It is therefore important to know much of the equipments of men, apparatus, and machinery, of the institution's traditions, and of the personnel of the student body before deciding where one should send one's child or ward, or where one should go himself.

As a degree depends for its value upon the number and character of the master minds with which its holder has been in contact during this formative period, of the opportunities for experimentation and observation that he has accepted, and of the broadening and refining influences obtainable at the institution and in its vicinity, rather than the actual cost of the tuition and other fees, it is of primary importance that this inquiry be made most painstakingly and thoroughly. For the impecunious student who is living on borrowed money, or on the money earned during the preceding week, the lowest-cost education may be the only one for him for the present; and for him, it is to accept the obtainable degree or none. It is remarkable the number of famous scholars and engineers who have been educated and have received their first degree under these supposed handicaps. But for others, and for the best minds, much can be said in favor of the more expensive institution which should be capable of giving more education and training for a dollar of expenditure. Until one has actually studied on the grounds the subject of college degrees and what they stand for, the courses required which make up the curricula, the men forming the faculty of instruction, the equipments in museums, classrooms, and laboratories, one does not really appreciate the variations in the different species of the educational genus. (See the author's paper on "The characteristics of mechanical engineering laboratories of American engineering colleges" in the Proceedings of the Society for the Promotion of Engineering Education, Vol. XX, pt. 2, p. 294-307, 1912.) Unfortunately, most of us take such things with blind prejudice and ignorant sentiment rather than after most careful inquiry. It is for this reason that mature and earnest students frequently make most excellent advisers of others who have neither decided where to go, nor have yet migrated.

At many institutions, the usual requirements for the bachelor's degree are the completion of a stated number of courses of study in the work leading to the degree, with brief quizzes, exercises, assigned problems, and tests in recitation room and laboratory, and one three-hour examination in each course at the end of each half-year. The system is very elastic. At these institutions the degrees of doctor of philosophy, master of science, and sometimes the M. A. degree are given for proficiency in special departments of study in the charge of the graduate school, or the committee on honor and higher degrees. Written examinations are set and the papers are read and graded by the instructors. Oral final examinations are held before a committee of the faculty. The system of having the students examined by

experts from other institutions does not obtain in this country as it does in England. With us, it would be probably considered as outside interference and would not be tolerated.

In England, until very recently, and now to only a slight extent, little value was attached to the possession of a degree, except in theology and medicine. The competitive examination system for scholarships is responsible for causing the sons of wealthy men to be coached by high-priced trainers whose business it is to cram their boys for the competitive examination. Employers in the manufacturing and engineering industries have found that such young men have usually forgotten what they once knew after the exigencies of the examinations have passed. The system which requires a man to have served his time as a clerk in a lawyer's office, as an assistant in a chemist's shop, or in a drug store as we would say, or to have served five years as an apprentice working at a trade from six in the morning to six in the evening, before he is eligible to become a student for a degree in law, medicine, or engineering, is also partly responsible for the lack of desire for a degree in one of these professions.

In Germany and the United States, men with degrees are sought for because it has been found that they have acquired powers of independent thinking and ability to reason. They have completed what they set out to do. They are the final product in a process of elimination, or of the weeding out of the less fit. They have done something, and done it fairly well, as compared with their classmates. The best men have shown originality in their work. Hence, they attack new problems with vim and a mental attitude conducive to success. In Germany much importance is attached to the university degree of doctor of philosophy and to the technical high-school degrees of "diploma engineer" and of "doctor of engineering." Some German manufacturers say that they would not engage a young man whom they purposed to advance to the highest positions who has not had either the full university or the technical high-school training. Preference is given to the man with a doctor's degree, because he has proved his ability to think, to work, to solve new problems, to get results, and has acquired the necessary amount of knowledge and experience.

There is still a prejudice against men who have spent their time in studying about things, rather than the things themselves. Unless a man has unusual discretion and tact, and is not spoiled by getting his degree, and until he has proved that his knowledge is real and not theoretical, and that he can do, as well as only tell about it, he is handicapped in the practical world.

In the United States the demand for recommended college and degree men exceeds the supply. It must be said, however, that only the best men are asked for and desired, and men with previous field, shop, drawing-room, and office experiences in getting along with men and things are at a premium. Manufacturers who have employed students during the summer vacations not infrequently tempt them to give up their college curriculum and remain at work with them. Some American manufacturers exploit impecunious students for the benefit of themselves, their companies, and their stockholders by enticing them away from their college work. Young men with college degrees in engineering have been found by manufacturers to be teachable, capable of doing work requiring special knowledge and some skill, and hence are in demand. From such men the company recruits its foremen, engineers, and executives. A degree is the open sesame to such opportunities.

The English system of preferment by examination, after a supreme spurt, as in racing, is not conducive to either the highest scholarship or the greatest professional skill and ability. The American system of plugging away day by day, completing each task on time, seems to bring the larger results. Science demands constant and steady work rather than supreme brilliancy and clever guesses. Even great inventions come as the results of much study and repeated failures. Edison is reported to have said that invention is 10 per cent inspiration and 90 per cent perspiration. In America daily class work in recitation and laboratory is preeminent. Such does

not seem to be the case in European countries, where the chief end seems to be preparation for examinations. Examinations are not the best method of finding out what a man knows, and still worse of finding out what he can do. Hence, degrees given solely as the result of one's question-answering ability, rather than for conscientious work done each day, should properly be at a discount in this practical world.

The best engineering curricula are based on many instructional courses well supplemented by courses requiring exercises, training, and the cultivation of the reasoning powers by problem and laboratory work. The value of a degree depends not only on the man, but on his training. He has had much knowledge imparted to him, but can he reproduce it and collect his selling price in the markets of the world? Is his mind a sieve or a container, a shipping platform or a storeroom? Engineering degrees represent training in judgment, rather than solely in memory; in logical sequences, rather than in the blind use of formulæ, than which nothing is more deadening to one's reasoning powers. Every engineering problem requires the application of principles and the judgment necessary in the application of them. Training in judgment and in thinking will eliminate from the curricula leading to a degree those men who are not competent to become professional engineers, but who may make a large financial success in engineering salesmanship, or in manufacturing, or in contracting, or in one of the mechanical trades. An engineering degree should stand for both a trained mind and trained powers of judgment and also for some engineering intuition. The great engineer is one who has learned to work with men and materials rather than with materials only. Hence, he must be human and have been trained in humanistic subjects, as well as in professional subjects. As has been said, "He should have a broad basic education with plenty of windows through which to look out on all surrounding objects, sciences, and operations."

Public service is what engineering stands for. This has been very forcibly illustrated in the personnel of the boards which have been recently appointed by President Wilson as advisory to our Army and Navy. These engineers have earned their degrees in studying truth, and in the training of their characters, and so becoming men of character and truth. The engineers that are being sent out from the engineering colleges of the highest grade in the United States to-day are making their presence felt and are contributing to the mental and moral stamina of the Nation. Many of them have not had an academic training, and hence are unable, as well as unwilling, to tell about what they have done and are able to do. For this reason, some of them possibly suffer for want of a publicity man. They prize their self-respect and modesty too much to have it otherwise. For this reason their services are frequently obtained for less than their true money value.

From 1900 to 1904, attendance at arts and science courses increased 15 per cent, while attendance on agricultural courses increased 102 per cent. From 1907 to 1914, the number of engineering students in attendance at our colleges was at a standstill and only now are the engineering colleges recovering from the combined causes for the cessation of the wonderful increase in numbers which they experienced before 1907. The pendulum now seems to be swinging upward again.

In the author's 1906 report as chairman of the committee on statistics of engineering education of the Society for the Promotion of Engineering Education (Procs. XIV, p. 94), it is stated that in 1904 85 different kinds of engineering degrees were offered, of which 22 were offered for postgraduate work and 63 for undergraduate work, or a total of 90 engineering degrees offered for work of different kinds and grades in these United States. Of the 22 degrees offered for postgraduate work, only 12 of them were conferred. Of the 68 degrees offered for undergraduate work, only 47 of them were conferred. It would seem as though the variety was almost 50 per cent in excess of the demand in 1904. In the past ten years the number of engineering degrees which have been offered by different American institutions has unfortunately increased to almost, if not quite, 100. With the coming of each new engineering industry, there

is some demand for a curriculum which will fit men for that particular industry; and each curriculum, it would seem, should have its appropriate degree.

We fear that this is the day of overspecialization in the more elementary matters of professional and technical education. Present tendencies seem to be continuing in this same general direction. In the report above cited, it is stated that 2,477 engineering degrees were conferred in 1904. Accurate figures for 1915 are not yet available, but it is estimated that almost 4,000 engineering degrees were conferred during the past year in this country.

There is some danger of our so-called professional technical schools and engineering colleges being diverted from their original intention into training schools for trained artisans and mechanics and for work which is strictly trade and manual, rather than professional and mental, and because of the probability of larger immediate pay than can be obtained in the elementary work of the professional engineering office.

American technical schools differ from our academic colleges in the amount, character, and method of their instruction. The former teach how to know and do; the latter, to know and tell. Knowledge and ability to do and to get tangible material results is the goal of the former. This is due in large part to the increase of the laboratory method of instruction as it obtains in our engineering colleges, and hence increases the value of the degree.

The curricula of our colleges of engineering are noted for being exceedingly heavy. They usually call for from 17 to 22 credit hours of work per week, or the equivalent of from 51 to 66 hours per week of total actual time expected from the student for from 32 to 35 net weeks per annum for four years. This is equivalent to from 136 to 176 credit hours for the four years, and to from 6,528 to a conceivable 9,240 actual hours of work in class and lecture room, in laboratory, and in preparation therefor, scheduled for the four years. The usual number of credit hours for the four years is 120 for the academic curricula and 155 credit hours for the medical curricula. These last are considered to be unusually severe and are specified and required by certain State boards of medical examiners as the first requirement for being allowed to take the prescribed examination. It will be seen that the number of hours it is expected the engineering student shall put on his work compares fairly well in strenuousness with the number required of the medical student who is supposed to be the hardest worked student of the university. Of course, as we all know, the expectations of the teacher and the actual doings of the students are very different things. This may be very fortunate, as it is doubtful if many men could keep up the prescribed pressure for the required time.

With the exception of the Sheffield Scientific School of Yale University, which has a three-year course for the degree of bachelor of philosophy, at all American colleges the curricula leading to engineering degrees are for at least four years of study after admission to the college or school of engineering.

Degrees may be classified in accordance with the requirements for admission. These vary greatly. At Columbia University, three years of academic college work is required for admission. This means six years of work for the professional degree in engineering.

At the very large majority of the engineering colleges, the requirement for admission is graduation from a high school of high standing with 15 units of entrance credit, certain ones of which are definitely specified and must be in mathematics and physics, or the passing of entrance examinations in these general and specified subjects.

On account of the excellence of the curricula maintained by certain schools which make a business of preparing students for certain engineering colleges, it is possible for the latter to maintain curricula the requirements for admission to which are further advanced than those of all the colleges which do not require one or more years of college work for admission. These institutions are therefore able to carry their stu-

dents further than are many other colleges in the same time with the same grade of students to work with.

Quite a large number of colleges in our Western and Southern States are not able to get students having the requirement of 15 units of entrance credit and have to be satisfied with less, and sometimes with far less.

From this it will be seen that as the extremes of requirements for admission differ by possibly as much as four years of school and college work combined, the knowledge, training, and education which has been received should be expected to differ somewhat similarly. Such is not always the case, as natural abilities differ likewise.

In all those institutions the requirements for admission to which are at least 15 units of entrance credit, the curricula include with an occasional exception, some work in English and one or more foreign languages, a daily course in mathematics for two years, courses in chemistry, physics, applied mechanics, and engineering drawing for one year each, certain elementary courses in architecture, surveying, advanced chemistry, physics, or in shopwork, followed by two years of work in the more technical and professional branches of the profession represented by the degree sought. These are very numerous. Some institutions offer over 400 different courses in technical or professional subjects from which to construct the last two years of the different curricula in engineering and leading to the bachelor's degrees. From this great variety of subjects and courses it is thought that any normal student can get pretty nearly any normal course that he may need for his undergraduate training. For still more specialized work, research, and investigation some of our institutions offer special facilities both in the way of libraries, laboratories, equipments, assistants, and of instructors to guide the graduate student. For such work, a library containing complete sets of the proceedings, transactions, trade, and professional newspapers, and the trade publications issued by manufacturers, and to which references are frequently made by the different engineering, technical, industrial, and scientific indexes that are published, is most essential to thoroughness and highest success.

The name of the degree and the letters by which it is represented are matters of lesser importance. As a matter of fact very few persons, either employers or friends, stop to ask the exact title, or scope, of the degree once it has been obtained. What most people want to know is was the man persistent and successful in getting what he set out to get. The different engineering degrees represent only minor variations in the applications of the great and abiding principles of geology, mechanics, heat, electricity, chemistry, and the like. Everyone knows of successful engineers who carry degrees which do not represent the branch of the profession in which their reputation was gained. Many successful men carry no college degree, except what they have earned in the school of experience and the college of hard knocks.

A degree being but the expression for a testimonial awarded by a corporate body should be truthful, accurate, and intelligible to the public. The terms bachelor, master, and doctor now have rather definite meanings, at least in university circles. A "bachelor" was one who was only a novice in the subject that he had studied and was desirous of teaching and practicing. The same is still true. Hence the bachelor's degree should stand for only what is intended, and the B. S., B. E., and the B. C. E. degrees should mean only that the holder has completed a prescribed series of courses of study along some branch of the line specified, received the diploma, or testimonial, of the faculty of the institution which granted the degree, and is adjudged worthy to be considered as a bachelor, or novice, in the profession in which he seeks to perfect himself. Similarly, the master's degree represents an additional year of still more advanced study along the same line, which has caused the holder to become more nearly a master of some department of the subject specified. The doctor's degree is the highest degree offered in course at American institutions, and requires three years of approved study after receiving the first or bachelor's degree.

Between 1898 and 1915, 6,320 degrees of doctor of philosophy were conferred by American institutions. Of these, 3,095 were in the sciences, and of these, 838 were in chemistry, 366 were in physics, 297 were in mathematics, 279 were in English, 71 were in agriculture, and only 19 were in all the branches of engineering combined, or about one Ph. D. degree conferred in course per year for engineering work.

The time was when professional engineering degrees were properly bestowed, because the receiver had studied practically all there was then available in print on the subject. The case is quite different now, as no engineer, even with a restricted engineering degree, is at all likely to have studied all the textbooks, proceedings, and transactions that are now in print in his restricted field of general engineering. However, a few of our oldest and best engineering schools still offer and confer the professional degrees for four years of undergraduate college work without the candidate's having had any special outside practice. A second few give these degrees on the completion of five or six years of college work. While a third but large number of colleges reserve the professional degree for those alumni who have made good in actual practice, and who present a thesis showing what they have done and pass a special examination on the post-graduate work that they have accomplished.

University sentiment is against the conferral of the Ph. D. degree except in course. For honoris causa, either the degree of doctor of science, or the still more rare, and therefore more highly prized, degree of doctor of engineering is conferred. The numbers of these in engineering may now amount to from two to four per annum for the entire country.

Honorary degrees when wisely conferred, or withheld, redound to the credit of the institution more than to the recipient. They should mark in men distinctions already made and gained and acknowledged by their peers. Our engineering schools have largely denied themselves the profits which would undoubtedly accrue from the distribution of honorary degrees among wealthy manufacturers and corporation officials, and have been content to confer them only for universally acknowledged engineering achievement or engineering learning. Universities are slower to recognize engineering ability and bestow upon it academic approval than they are to see and reward academic learning, political success, and financial prowess.

Engineering colleges have not suffered the competition created for the academic colleges by fake universities who advertised the sale of academic green goods and sold them to people who were willing to buy counterfeits. We have no engineering colleges offering doctor's degrees to persons who are willing to pay \$75 and to testify on honor (?) that they have read eight popular standard books on engineering science, as was exposed in this city of Washington a few years ago. Our United States Bureau of Education may have had to squelch some low-grade colleges which were honestly trying to do what they thought was good work for their environment, but it has always been able to find the habitation of the so-called engineering college, but not always of so-called Ph. D. faculties. Many colleges have accredited, or white lists of schools and colleges, but we need a black list of those which are valueless, misleading, or worse, and possibly a gray list of intermediates. It is very unfortunate that we have any institutions whose color is shady. It is fortunate that the demand for laboratory facilities and the expense of operating them prevent the exploitation of the diploma market in engineering.

The only remedy for variation in the values of undergraduate degrees is governmental regulation, and with it would come the end of growth by competition and of adaptation to environment.

The significance of the engineering degrees offered and conferred in these United States depends therefore upon the many factors which have been mentioned. Unfortunately, the same degree does not always mean the same thing, and unless it is known what institution gave it, it is impossible to evaluate it, just as it is well to know the signer of a letter of recommendation so as to properly evaluate it. Fortunately, degrees

can be earned which represent value received in exchange for the expenditures of time, brain matter, and money, and in variety to satisfy the most fastidious. The time has now passed forever when it will be necessary for American youth to go abroad in order to get a good education, or to earn a degree that will be recognized as being at par in the markets of the world. The increasing numbers of students from other countries now in attendance at American educational institutions would seem to indicate that some of the work that is being done for professional education is appreciated outside of our borders and that we can be helpful to others besides ourselves.

The CHAIRMAN. Time presses us to go on with the next paper or papers: "The influence of technical journalism on mining education," by Mr. Thomas A. Rickard, of the Mining and Scientific Press, San Francisco, Cal., and "The influence of technical journals on education," by Dr. Thomas T. Read, of New York. The chair understands that neither of these gentlemen is present. If the chair is correct these papers will be read by title only.

THE INFLUENCE OF TECHNICAL JOURNALISM ON MINING EDUCATION.

By T. A. RICKARD,

Member of the Institute of Journalists and Editor of the Mining and Scientific Press.

The subject allotted to me is a big one. In order to treat it with any hope of success I must restrict my scope to the journalism that concerns itself with the mining of minerals other than coal and to the metallurgy of minerals other than iron. The industry of coal and iron covers a wide range of human effort, quite apart from ordinary metal mining.

Under technical journalism are included the periodical publications—usually weekly, rarely monthly—that furnish articles on current technology, accompanied by editorial comment and supplemented by news concerning the progress of the mining and metallurgical industries. In order to understand the relation of this phase of the publishing business to the work of mining it is necessary to recognize, in the first place, that it is done for gain; it is supported by the advertisements of the manufacturers engaged in supplying the needs of an industry to the scientific and ethical sides of which the technical journal is supposed to minister. Success in this form of business depends not upon the number of subscribers, but the number of actual readers connected directly or indirectly with the selection and purchase of the machinery and supplies offered for sale on the advertising pages. The proceedings of the technical societies do not come under the heading of journalism, because they furnish neither comment nor news concerning current events; they are bound volumes or paper-covered bulletins composed of essays on technical subjects. Those that attach advertisements to their bulletins are neither amateur nor professional; they are hybrids. Journalism is a profession, just as much as mining engineering. The two professions flourish best when each is kept true to its function.

In the United States the journalism of mining has been coexistent with the application of science to the exploitation of minerals. The Mining and Scientific Press was founded at San Francisco in 1860; the Engineering and Mining Journal at New York in 1866. While others have come into existence, and gone out of it, during the last half-century, these two represent such educative factors as journalism has given to the metal-mining industry of the United States.

An educative effect was barely possible 25 years ago when the best technical journal, consisted of a dozen pages of heterogeneous information, including one technical article, and editorial comment so brief as to fail in creating any mental impression. It may not be gracious to say so, but it is encouraging, at least, to realize that in this field of human activity, as in others, there has been progressive development. To this may be added the postscript that the best of existing technical papers is so far behind the ideal that there remains unlimited scope for further endeavor. When some nearer approach to that ideal has been made, then indeed technical journalism may be powerfully educative; at present it is content usually to be intensely instructive. Education is the "drawing out" of the best faculties of the mind; instruction is the conveyance of knowledge. The French distinguish between these two words much more closely than we do. We use them almost as synonyms. The technical journal sets itself to give information to those engaged in the application of science to industry. It also furnishes news concerning actual progress in the operations of the particular industry to which it is devoted. It chronicles events of technical importance and comments upon them. All of which is usually instructive, and but rarely educative.

The foregoing characterization is true, but I hope to provoke a demurrer. In so far as journalism is scientific it is also educative. The two great commandments of science are (1) thou shalt observe carefully; (2) thou shalt state accurately. In so far as technical journalism respects or inculcates, by example or by precept, the fundamental principle of science, namely, truthfulness, it can not but be an instrument of education to the human intelligence. Indubitably the recognition of the verities of fact in nature promotes a respect for veracity of thought and deed throughout human affairs. There be those that play tricks with their arithmetic as with their conscience, but in the main the ways of science tend to the development of intellectual honesty. And that is a gift of transcendent value to mankind. Beyond all other men, the engineer must perform his work with intellectual honesty; without it, not only does he stultify his mind but he destroys his work. The dilettante of science may please himself with incorrect deductions without manifest injury to himself or to others; but the engineer applies his reasoning to physical facts, and any blunder in the logic entails a failure in visible achievement. Therefore, engineering, whether of mines or railways, is based on devotion to the truths of nature as ascertained and systematized by science. Hence, the technical journalism that is devoted to mining engineering must, in a measure, spread scientific principles among the mining population and thereby prove educative through the inculcation of essential truth. Of course, there are some mining papers that have so sacred a regard for truth as rarely to use it, but these do not come within the purview of our present discussion. On the whole, we may conclude that the exploitation of technology by journalism must contribute to the development of such a mental attitude toward both man and nature as is favorable to education.

So far we have considered an effect that is unconscious. Technical journalism has not posed as an educator. The intention has been to interest those directing or taking part in mining or metallurgical operations, with a view to securing them as habitual readers. If these are won, then the journal becomes an effective medium for publicity to manufacturers having machinery or supplies for sale. This practical basis of the business of journalism must be kept in mind if the discussion of the higher function of such periodical publications is to be anything more than academic. While the basis may be earthy—that is, commercial—it leaves room for a large measure of independence in the editorial sanctum. A water-tight partition is possible between the business end, which looks to the advertiser only, and the editorial end, which looks to the reader only. So long as the editor prints matter that is interesting to those engaged in mining, he is free to print what he likes, for his immediate duty, unexpressed, is to publish matter that will catch the eye and hold the attention of that particular public, mainly pro-

professional, which uses the machinery and supplies pictured on the advertising pages. With these he himself has nothing to do. In order to be interesting—that is, to merit confidence in what is written—the editor and his staff must be as detached as possible from the buying and selling of machinery, as also of mines or shares in mines—in short, aloof from anything that may undermine the intellectual honesty and the consequent trustworthiness of the reading matter, more particularly the editorial comment. In this respect the journalism of mining is more free and independent, I believe, than the daily press. The big bias of politics is largely eliminated as a factor of error. Appeal is made to a public of more than average intelligence. Independence of attitude is facilitated by the fact that subservience to any particular interest is so quickly detected and resented by the readers as to endanger the value of the paper as a medium of publicity. This tends to give the successful technical journal a character that may fit it eventually to assume the function of education consciously. As yet its effect in this direction is incidental.

Technical descriptions of methods and processes, together with accounts of current operations, are instructive only. Except in their respect for truth, they are not educative. That function devolves upon the editorial comment and upon the discussion—in the form of correspondence—that it may evoke. When the editor's remarks were limited to short paragraphs there was little chance for the ventilation of those more subtle questions of professional conduct, civic duty, or economic insight that lie at the base of a mining engineer's education. But as the business of mining grows the successful mining periodical expands into more pages of reading matter and reaches a size furnishing adequate space for the reasoned consideration and thoughtful discussion, not only of the technology of the physical operations, but also of the philosophy of mining, including the ideals of conduct obtaining among all those engaged in such operations, the relations of capital and labor, the ethics of the engineers, the duties of the directors, the vagaries of the speculative public, and the other human aspects of a world-wide industry. This, of course, is truly educative.

As yet, however, these delicate and knotty problems, and the whole subjective side of the industry, can not be said to furnish the frequent topic of technical journalism. The reasons for such infrequency or disfavor are fairly obvious; in the first place, the average reader asks for information rather than opinions, he wants the facts and data that he can use in his daily work as a consulting engineer, manager of mines, appraiser of mines, metallurgist, superintendent of mills or smelters, assayer, surveyor, economic geologist, prospector, etc. Just as the man who goes to the theater expects to be amused first of all, and may accept a moral lesson incidentally, if it does not spoil his amusement, so the average reader wants useful information first, and then, if the editor has space and the reader has time, the latter may give his attention to "the great imponderables" as discussed on the editorial page. In short, a paper must succeed in giving valuable information on the concrete affairs of the mine, mill, and smelter before it can hope successfully to discourse on the abstract matter of human relationships. Moreover, such subjects provoke antagonism, which is good proof that they touch interests that are vital, both commercially and intellectually. They are controversial because the readers of the technical press are to be found on both sides of the chief issues involved, those of the buyer as well as the seller of mines, those of the shareholder as well as the director of mining companies, those of both employer and employee, those of the engineer and of his client.

It is impossible to discuss the complexities arising from such relationships without offending some, that is, if it is done frankly and fearlessly—and if done in any other way it is offensive to everybody. Yet it is done, and my own belief is that it can be done not only so as to increase the usefulness and prestige of the mining press as an organ of public opinion, but also in such a manner as to advance the financial interest of the publisher, if it be assumed, as we may do confidently, that those in control of the complex activities of mining are serious and thoughtful men. Man does not live

by bread alone. The men of most consequence, the capable and the successful, recognize that the more interesting and the more important aspects of engineering are beyond the scope of the slide-rule. Such men, when the day's work is done, may not desire a doze of technology; they are more likely to find satisfaction in a discussion of the principles that give life to the dry bones of fact and of the ideas that give direction to the lives of men.

Thus we come to the conclusion that the educative function of technical journalism is as yet subconscious, if not wholly unconscious; it reflects the spread of real education among the larger part of the population engaged in mining and its related professional or industrial activities. The tremendous growth of technical training as given in the mining schools and colleges of this country is the consequence, of course, of the extraordinary increase in the production of metals, itself the result of a demand created by the rapid development of our material civilization. The increase in the metal production of the United States during 20 years is shown by the following figures:

Metals.	1894	1914
Gold.....ounces.....	1,923,619	4,440,904
Silver.....do.....	49,846,875	67,929,700
Copper.....short tons.....	176,752	546,442
Lead.....do.....	156,530	512,794
Zinc.....do.....	74,004	353,049

Complete statistics of attendance at the mining schools are not available, largely because many new schools have been started during the last two decades, but, judging from the records available to me, I conclude that instruction for mining was being given to twice as many young men in 1914 as was the case in 1894. Thus it is readily understood why technical journalism is finding a larger and more discriminating public and has arrived at a point when it may begin consciously to perform its educational function.

If this function is to be performed effectively, it will be not by the printing of chronicles and comments only, but by the furnishing of criticism and ideas. Literature is a criticism of life; journalism is a criticism of daily life; technical journalism must become a thoughtful criticism of all that concerns the technical man—the man who does things, the engineer, the exploiter, and the explorer. The mere compilation of descriptive articles and the recording of detailed results will be left to the technical societies, the publications of which are now so voluminous as to insure mental dyspepsia to the man who tries to assimilate them omnivorously. Even such intermittent opportunities for the exchange of ideas as are furnished by congresses and conventions can not perform the function of journalism because they are too sporadic and too ephemeral. An educative effect can be achieved best by iterative effort. A public meeting may be stimulating momentarily, but to exert persistent influence it is necessary to use persistent methods, to present the same idea many times in various guise, to awaken interest and to hold it until a given idea has been grasped, considered, received, or rejected in favor of others that are better.

Technical publications to-day suffer from being too numerous and too voluminous. Twenty-five years ago a man of active mind could read all that was written on his branch of technology and could keep in touch with the allied subjects, but to-day the output of the technical societies, congresses, and press is beyond the compass of any individual. We shall agree that the quantity of printed matter on technical subjects is enough and to spare. Not much of it is educative, because so little of it is critical. What is needed henceforth is to insure that the output of new facts, new records, and new ideas shall be accompanied, checked, and disciplined by wholesome criticism. That is the duty of journalism, and in the performing of that duty journalism will render the truest service to the cause of education.

THE INFLUENCE OF TECHNICAL JOURNALS ON EDUCATION.

By THOMAS T. READ.

Any discussion of this topic must needs be based on a definition of the word education, which is commonly used in a variety of senses. By many, education is regarded as nearly synonymous with school training. When this definition is scrutinized it is seen to be seriously defective, for our major premise must be that education, whatever it is, is something useful, and much of the training of our school system is obviously not useful. At the age of 16 I underwent a half-year high-school course in botany. Shortly after completing that part of our book which dealt with the geranium family I made a Saturday afternoon excursion into the country and brought back a handful of wild flowers, which I was quite unable to identify even with the aid of my textbook and my teacher. Some years later I accidentally learned that my flowers were the wild geranium, so common throughout the eastern United States. (It is only fair to my teacher to add that he had specialized in zoology.) A couple of years later, as a freshman in college, a one-hour-a-week course in botany was required of me, and of this not even a memory remains. The sum total of my present useful knowledge of the world of plant life has been derived solely by reading and observation. This is so typical of much school training that it may serve as an example to demonstrate that it can not be regarded as synonymous with education.

Or, again, education may be regarded as the possessing of knowledge. The adequate rejoinder to this is to ask whether a man shipwrecked on a desert island, on the beach of which he finds a million dollars' worth of gold, but little of food or shelter, is really a rich man. The general agreement would be that a contented workman in a comfortable home is far richer in all that makes life worth while. Unless knowledge exhibits itself in useful action, it is of no great value from the standpoint of education. The aggregate of the interdependent actions performed by an organism is designated by philosophers and moralists as conduct and is defined as the adjustment of acts to ends. Education, in its broadest sense, may then be defined as the knowing what ends to choose and how to adjust acts to those ends. The blacksmith who finds it desirable to make a pick, and who knows how to choose steel of the proper quality, and to heat, shape, and finally temper it, is, in that field of conduct, an educated man. Similarly the statesman who perceives the future needs of his country and is able to prepare intelligently for them is an educated man. At statesmanship the blacksmith would probably show himself an ignoramus, and the statesman equally so at blacksmithing. A completely educated man would show himself an adept at every act he was ever called upon to perform; a well-educated man would be skilful at every act he might conceivably be called upon to perform.

This view of the matter leads us into great difficulties also, for mental activities of the highest usefulness, such as Newton's formulation of the law of gravitation, can scarcely be stated in terms of conduct, though they may profoundly affect the conduct of others. Natural ability also confuses the issue; one man becomes a crack golfer without ever having had a lesson, another after years of coaching and steady playing is still a hopeless duffer. Those who have taught in primitive countries gain a vivid impression of how much of the education of American children is self-acquired; the young Zulu or Filipino must be taught with much effort many things that would not even need to be explained to an American child of the same age. Unfortunately the word education, from its derivation, presupposes a drawing out, or educative process. On this basis the man who knows without having been taught is uneducated; he who has been taught, but still knows only imperfectly, is educated. For the purposes of this discussion it will be necessary to restrict our definition of education to the training, either by himself or others, of a person to choose ends and to adapt his acts to those ends.

In such a training a great variety of means are employed. Foremost in the public eye is that formal system of training, beginning with the kindergarten and ending with the university, that is so notable a feature of American life. It has already been pointed out that this so-called educational system does not cover the whole of education, it may now be pointed out that it is not even the most important part of education, since at the most it rarely covers more than a third of the lifetime of the most favored individual, while the average man is able to devote little more than a seventh of his lifetime to such formal training. No man is able to foresee what his ends will be, therefore he can not prepare himself in a few years to meet all the subsequent situations of an active and busy life. The larger part of education must therefore be synchronous with life itself.

The means utilized by the average man in this life-long process of education are of varying importance, according to the individual. For the pioneering type of mind observation and experiment are the chief means, others learn little more than to imitate the successes of those about them. Wisdom, after all, is largely accumulated experience, and the printed page permits the permanent record of experience for the benefit of later comers. It is chiefly through diagnosing his own situation and learning how other men have successfully met such a situation that the average man guides his life.

The situation thus created affords to the technical journal its field of usefulness. The high ideals by which the publishers of most technical journals are animated do not obscure the fundamental fact that such journals are commercial institutions that through successfully meeting a real human need afford to their owners a financial profit. Contrary to public opinion, this commercial aspect of technical journalism is an advantage rather than a drawback. An institution animated only by ideals need not be, and often is not, well adapted to human needs, just as a college professor often teaches a course to his own complete satisfaction and the equally complete dissatisfaction of his students. Ideals, furthermore, may be mistaken ones. But unless the technical journal meets, and continues to meet, the needs of its clientèle its failure is at once registered on its ledger, and it is thus automatically regulated.

A distinction must here be made between trade papers and technical journals. They both aim to meet needs in the field of technology, but the aims are quite different. The former conveys news of direct commercial value, such as market prices and trade indications, the latter purveys information of indirect commercial value, through increasing the efficiency of the reader. The technical journal is therefore primarily an educational institution, since it is in this field that it seeks its commercial success.

As an educational institution the technical journal has some advantages and equally distinct handicaps. Appearing each week, or at most each month, it is able to keep abreast of progress in the field of knowledge. Practice in engineering is in a constant process of flux and if the ablest engineer should, like Rip Van Winkle, sleep for a few decades he would find himself in an equally altered world. This is an even more powerful reason than the one already cited why education must be synchronous with life and can not be confined to any set period. Encyclopedias of knowledge promptly become out of date as soon as they are printed and some publishers have attempted to overcome this defect by issuing, from time to time, supplementary leaves for insertion in the volumes. So far as I know colleges of technology, other than of medicine, have not devised any means of meeting this situation. Physicians and surgeons have, however, adopted the wise custom of returning every few years to some post-graduate clinic or hospital for instruction and practice in the latest refinements of their art. The custom could be adopted with profit by engineers generally, and if there were any general demand for such instruction adequate courses would be provided.

At present there are only three means that permit an engineer to keep in touch with progress; the careful study of new books, the reading of technical journals and the bulletins of scientific societies, and public and private discussion with fellow engineers.

The study of books is commonly accepted as the leading method, but its importance has certainly been overrated. In the first place there are many new developments of importance which no one incorporates into a text book until they have become ancient history. In the second place, a text book is commonly written in a more or less set style and of the material included within its covers three-quarters is commonly elementary and of more historical than practical importance. In perusing it a student is obliged to take in a great deal of matter that is not profitable, just as an animal takes in a great deal of indigestible matter with its food. The successful presentation of educational material is, therefore, much like the successful exploitation of breakfast food; more importance attaches to the appetizing presentation of the material than to its actual nourishing value. In text books this feature is commonly ignored.

Another important point hangs on the psychology of attention. A deep impression may be made on the mind either by a powerful shock, or by a series of light ones. A fact may be learned either by being forcibly presented once, or by repeatedly coming to the attention without any great force. The weekly or monthly journal has the great advantage, as an educational medium, that it is able to repeatedly present the same material in the articles of numerous writers on different phases of the same topic. One who regularly reads a technical journal, even without marked attention, is therefore likely to learn more about topics of current importance than one who reads a book, even with close attention. The most powerful educational medium is a public discussion of current problems by well-informed men, since it at once attracts attention and is confined to those matters which are of most importance. Most technical journals offer facilities for the carrying on of such discussions and encourage and stimulate them as much as possible.

On the other hand the technical journals labor under the handicap of not being able to publish much material that can not be presented in concise form. The technical journal must interest its readers, and long and detailed articles are not generally interesting. The journal therefore needs to be supplemented by the papers and monographs published by technical societies and Government bureaus and by text books. This is the more true because many writers, in order to secure conciseness, assume that the reader is familiar with all the fundamentals of the subject and confine themselves to the phases of greatest current interest. This makes the article most readable to one who is familiar with the fundamentals, but almost unintelligible to one who is not. It is evident, therefore, that a technical journal is not a complete educational institution, but needs to be supplemented by other means. It also suffers to a lesser degree from some of the drawbacks of the text book. Some topics may elicit more discussion than their importance warrants, others may not be discussed at all, and while the technical journals endeavor to present their material in a lucid and interesting manner they are dependent on their contributors, who may not perceive the necessity for being lucid and interesting. Finally, the fact that information on a topic appears from time to time at irregular intervals has its distinct drawbacks, just as a novel which can be read at a single sitting is much more fascinating, to many people, than a continued story, of which the facts must be kept in mind from week to week. Generalizations on this topic are rendered difficult by the varying characteristics of individual minds, some of which take impressions better through hard application, while others are more affected by frequent repetition.

Another phase of this general topic which deserves discussion is the use of technical journals in the formal courses of instruction given in technical schools. So far as I know, no data have ever been published, and the haste in which the foregoing has been written has precluded any attempt to secure them. Personal experience indicates that comparatively little use is made of technical journals in most institutions, except for collateral reading by advanced students. In teaching Chinese undergraduates in a technical school in China I found it extremely easy to interest them in technical

journals. Probably American undergraduates could be similarly interested, but to do so would involve an increase of individual attention, while conditions in most schools all make for class instruction and the minimum of individual attention. It is customary to advise the student that his education has just begun in college and that he must continue it after graduation, but no definite plan for doing so is ever presented to him, and it is largely a matter of chance if he forms the habit of systematic reading. It would seem highly desirable to work out a plan whereby the undergraduate might be interested in reading technical journals at the beginning of his course, this reading to be so guided and supervised that it might be made a valuable factor in his course of instruction as well as the foundation for a life-long habit. This would necessitate a change from present methods, but is a matter well worthy of more extended discussion than is possible here.

Adjournment.

**JOINT SESSION OF SUBSECTION 8 OF SECTION IV AND
SECTION III¹**

RALEIGH HOTEL,
Friday morning, December 31, 1915.

Chairman, A. C. TRUE.

Session was called to order at 9.30 o'clock by the chairman.

PAPERS PRESENTED.

Education in forestry, by J. W. Toumey.

Phytotechnic studies and agricultural experiments in "La Estanzuela," Uruguay, by Alberto Boerger.

The progress of agricultural science in Cuba, by J. T. Crawley.

Extension education, by Kenyon L. Butterfield.

¹ The papers and stenographic report of this session are printed in Vol. III of the Proceedings

SESSION OF SUBSECTION 1 OF SECTION IV.

NEW WILLARD HOTEL,
Monday morning, January 3, 1916.

Chairman, JOAQUIN D. CASASÚS.

The session was called to order at 10 o'clock by the Hon. P. P. Claxton, commissioner of education.

MR. CLAXTON. In the absence of Dr. Finley, commissioner of education of the State of New York, chairman of the subsection on elementary education, it becomes my duty to do what I know he would do with great pleasure—introduce to you as the presiding officer for this morning's session Señor Joaquín D. Casasús, formerly ambassador from the Republic of Mexico to the United States.

Señor Casasús will take charge of the morning's program.

SEÑOR CASASÚS. Ladies and gentlemen, I am most grateful for the honor conferred upon me. I will try to do my best because I have always been interested in this great and important problem of education. Perhaps you might consider that being a lawyer, and having been ambassador to the United States, I have not taken any interest in educational problems. That is not true. During my life I have occupied several modest positions, and during many years I was at the head of the commercial school in Mexico City, where I tried to do my best for the betterment of commercial education. Early in my life I was also interested, deeply interested, in the problems of primary education. I have been myself a professor. I have lived a university life, so that I can never forget that I come from amongst those who have consecrated their lives to the problem of education. I belong to you, and I will always be with you.

The following papers will be presented at this session:

Panamericanismo y educación, by Sra. Ernestina A. Lopez de Nelson.

La instrucción primaria en sus relaciones económicas con la localidad y el estado, by Darío E. Salas.

La instrucción pública en el Paraguay, by Juan F. Pérez.

El problema de la educación primaria en la América Latina, by Guillermo A. Sherwell.

Value of the kindergarten in the public-school system, by Lucy Wheelock.

PANAMERICANISMO Y EDUCACIÓN.

Por ERNESTINA A. LÓPEZ DE NELSON,

Ex-Rectora del Liceo Nacional de Señoritas de Buenos Aires.

Si a primera vista podría parecer sorprendente el incremento que en estos últimos años ha adquirido el sentimiento panamericanista en la mayor parte de los Estados del continente, para el espíritu que se detiene a pulsar los móviles de los hechos sociales, resulta más sorprendente todavía que ese movimiento haya sido necesario. Diríase que América no hubiera debido necesitar jamás de propagandistas que pusieran de manifiesto ante sus ojos, la conveniencia mutua de un mayor conocimiento recíproco. Con orígenes comunes en su mayor parte, nacidas del propio esfuerzo a la vida independiente, empeñadas por espacio de un siglo en construir su porvenir, con iguales problemas a resolver, sin tradiciones que respetar o destruir, libres de organizar su vida según las sugerencias del propio ambiente, ricas y prósperas por igual, llenas de empuje y de savia nueva, las naciones de América hubieran debido sentirse demasiado cerca una de otra para que fuera necesario recordarles jamás que en torno de cada una de ellas vivían y palpitaban con las mismas ambiciones y propósitos otras tantas hermanas ignoradas.

Y sin embargo ese movimiento no sólo ha sido necesario, sino que se abre paso muy lentamente como si tuviera que vencer primero inconcebible resistencia.

Europa ha hecho sin duda mucho mayor trecho en el camino de su compenetración con la América de lo que ha hecho ésta por compenetrarse consigo misma. No obstante nuestra separación política de las primitivas metrópolis, Europa ha mantenido con nosotros innegable comunidad de intereses. Nos ha mirado siempre como el producto de su sangre y de su inteligencia, como la emanación genuina de su fuerza, como la obra de su audacia y de su valor, como algo espiritualmente suyo, en fin. Y por eso mismo, sin duda, ha tenido confianza en nosotros, nos ha creído capaces de realizar cosas grandes y buenas, de crecer a su imagen de heredar su cultura y de desarrollar aptitudes múltiples a semejanza de las suyas. Sometiéndose a los acontecimientos que la privaron de sus colonias, ha seguido manteniéndose unida a ellas por el constante intercambio de sentimientos y de ideas. No pudiendo ya mandarle gobernantes que reflejaran su poder, le ha mandado los obreros más eficientes de su democracia, parte de su sangre y de su energía con que perpetuar la cadena de los lazos étnicos, parte de su oro con que levantar el edificio de su prosperidad material; y por sobre todos estos dones valiosos le ha hecho el de mantener encendido frente a ella, por espacio de siglos, el foco ultrapoderoso de su intelectualidad que alumbra la vía por donde se transmiten de una a otra, las vibraciones más sutiles de la simpatía y del mutuo entendimiento.

El resultado de esa política, que no hay duda ha estimulado en gran modo la suprema necesidad económica de una y otra, no ha podido ser sino uno: América ha mantenido sus ojos constantemente vueltos hacia Europa; allí está su cuna; de allí le han venido en todo tiempo las noticias del mundo, aún de su propio mundo, más remoto para ella cuando apenas la separan unos cuantos grados hacia el Norte o hacia el Sud que el continente dividido del suyo por la inmensidad del Atlántico.

Europa ha sido y es, a lo menos para la mayor parte de la América, el guía de sus gustos, la escuela de su juventud, la inspiradora de sus reformadores, la proveedora de sus bibliotecas y museos, la Meca a que es necesario acudir en peregrinación para consagrarse docto, la autoridad en fin que se acepta de buen grado y que se reconoce sin reparos.

Si asombra al mundo un hombre excepcional, América busca inmediatamente su cuna en cualquiera de las viejas metrópolis europeas; si un descubrimiento revolucionario las ideas establecidas, ha debido nacer en Europa; si necesita un estadista, un profesor, un sociólogo para iniciar cualquiera obra nueva, es a Alemania o a Francia a donde acude en su busca; y hasta el vulgo consagra esa omnipresencia de la Europa

en la mente americana, cuando acepta como nacido en España a todo el que habla español, u olvida que se puede hablar inglés y haber nacido en América.

Pero ¿es indiferente acaso que esto suceda? ¿Puede la gran doctrina del monroísmo ser una verdad en marcha, mientras medio continente ignore al otro medio y se incline a mirar como más allegado precisamente al que está más distante de él no sólo geográficamente sino socialmente?

Por una parte los Estados Unidos que han conseguido con tanta felicidad crear un mundo propio, que han desecado en su suelo las viejas corrientes de instituciones y doctrinas caducas, para lanzar en sus cauces verdaderas cataratas de instituciones y doctrinas nuevas, alimentadas por principios que el mundo había ignorado hasta entonces; que están en vías, no sólo de pasarse sin la Europa, sino de acudir a ella, no pueden sin desmedro de su porvenir y de sus intereses de mañana, pasarse sin el resto de América, alzar desdefiosamente los hombros ante su ignorancia y pagarle con una ignorancia igual.

Los Estados Unidos necesitan y acaso lo necesitarán cada vez más, formar filas cerradas con los demás Estados de la América y por propio interés tienen que poner todo su esfuerzo en desviar la corriente de atracción que los orienta hacia Europa. Por lo mismo que han desarrollado esa fuerza prodigiosa en todos los terrenos de la actividad humana, por lo mismo que han llevado tan lejos sus ideales democráticos y sociales, el hecho de levantarse solos en medio de un continente que los teme, por lo mismo que los desconoce, implica para ellos un serio peligro. Y por otra parte ¿no está en la propia conveniencia del resto de la América aprovechar de su hermana del Norte lecciones que nunca podrá darle la Europa acerca de la mejor forma de solucionar problemas comunes?

No, no es indiferente, sin duda, que la América se ignore a sí misma, y no lo es para el más grande como no lo es para el más pequeño de sus Estados. En los últimos años una especie de oscuro instinto de conservación y de defensa ha despertado en toda América el deseo del mutuo acercamiento. Pero el que arroja una mirada sobre el continente no puede menos de sentirse descorazonado ante lo ínfimo del camino que se ha abierto todavía esa tendencia.

América está sin duda en la empresa de descubrirse a sí propia. Un siglo de vida libre compartida y todos los adelantos del vapor y de la electricidad que suprime las distancias, al alcance de su mano, no le han servido para saber mucho más de sí misma que aquéllos que en el siglo de las aventuras épicas creían plantar la cruz de España en la fabulosa Cipango, cuando en realidad pisaban tierra antillana no menos prodigiosa aunque más desconocida.

En Sud América el sentimiento de desconfianza hacia los Estados Unidos no se ha disipado aún por completo; todavía tienen público los oradores que exaltan el peligro imperialista y que glosan a su antojo la doctrina de Monroe.

Y esa misma desconfianza, si bien basada en el temor de peligros de distinto orden, es la justa retribución de los Estados Unidos hacia Sud América, cuando en las transacciones comerciales su primera mirada es para el tribunal que ha de salvaguardar los intereses norteamericanos y garantizar el cumplimiento de los pactos preexistentes.

¿Hay en realidad motivo de una u otra parte para temer la absorción, o el desconocimiento de las obligaciones contraídas? El espíritu más prevenido no podría subrayar ese motivo. Pero ¿hay acaso necesidad de buscarlo? La historia de la humanidad nos ha enseñado con infinidad de hechos concretos que el hombre teme siempre aquello que no conoce. Tan pronto como las causas que producen el fuego, dejaron de ser un misterio para los hombres, éstos dejaron de temerlo y si con ese temor cesaron sus homenajes divinos, lo apreciaron y admiraron más, a medida que sus efectos fueron para ellos más familiares.

Los centros sudamericanos mejor informados de cuanto pasa en el mundo europeo, exhiben una sorprendente ignorancia respecto a la vida y a los ideales de este país, y como sucede siempre en tales casos, lo que de él les llega no es lo más característico,

cuando no la excepción que lo coloca a la luz menos favorable. Será fácil que se conozca allí el nombre de cualquiera de los reyes de la industria, por el número de millones de su dividendo anual; pero es seguro sorprender a los mismos que conocen esos pormenores, con el relato de la obra social que ese mismo industrial realiza entre los obreros de su propia fábrica, entre los niños y las mujeres del barrio, en la comunidad en fin, a la que devuelve, en la forma más elevada e inteligente, el dinero que de ella recibe. No se ignora allí, por cierto, que la mayor parte de los Estados de la Unión, han concedido el voto a la mujer; pero se escuchará con asombro mezclado de incredulidad el comentario de la fuerza moralizadora que esa franquicia ha tenido en esos mismos Estados; y el que refiera con las estadísticas en la mano, hasta qué punto se han robustecido las energías de la raza, en ciertos Estados de la Unión, desde que, concedido el voto a la mujer, ésta ha abierto una verdadera campaña contra el alcoholismo, puede estar seguro de haber abierto un libro en blanco ante los ojos de los que le escuchan.

El desarrollo prodigioso de las industrias en los Estados Unidos, a lo menos como un fenómeno de orden general, no deja de ser conocido ciertamente en la América del Sud. Pero ¿cuántos son los que saben allí que a ese desarrollo va unido un progreso real en cuanto a los medios de hacer el trabajo más sencillo y menos peligroso para el obrero?

Sería inútil entrar en pormenores acerca de lo poco que realmente sabemos en Sud América con respecto a los Estados Unidos; pero el orgullo, por cierto muy legítimo, que este país siente por sus hombres y sus instituciones, ha de sentirse hondamente lastimado cada vez que le es dado comprobar hasta qué punto ignoramos precisamente lo que más le enaltece para dar importancia a hechos en realidad insignificantes dentro del cuadro de su grandeza moral.

Los convencidos de la influencia benéfica que una mayor compenetración con la vida y los ideales americanos podría tener para la América Latina, lamentan sinceramente esa ignorancia, pero tienen que reconocer al mismo tiempo que la actitud de los Estados Unidos hacia las naciones del Sud de América, estimula muy poco en ellas el deseo de conocerlas mejor. Si la Europa ha ejercido sobre nosotros la atracción que todos sabemos, llegando hasta hacérsenos indispensable, hay que reconocer que es gracias a su esfuerzo por salirnos al encuentro, demostrándonos una confianza y un conocimiento de nuestras cosas que han conquistado nuestra simpatía. Para Europa las naciones sudamericanas son entidades inconfundibles y aunque, emanaciones suyas, no se desdía en concederles personalidad propia. Pero ¿qué argentino, por ejemplo, no se sentirá descorazonado, al leer en una bien informada revista que ve la luz en el mismo país que ha construido para el suyo sus últimos *dreadnoughts*, que "esas máquinas de guerra las más grandes y costosas están destinadas a la República más chica: la de Buenos Aires en el Brasil?" ¿Cómo pretender que no se sienta deprimido el chileno al que en una recepción oficial en los Estados Unidos, se le da la bienvenida, exaltando en la nación que representa las características propias de España?

No es ya tan sólo la enojosa confusión de fronteras, en virtud de la cual los habitantes del Perú han de tener costumbres mexicanas, los argentinos hemos de tener el clima y los productos del Brasil, y los venezolanos han de honrar glorias guatemaltecas, es que para muchos, para muchísimos norteamericanos las naciones de Sud América son todavía colonias españolas, si no políticamente, a lo menos en cuanto a la raza y las costumbres se refiere. Un siglo de independencia y de labor propia, no ha hecho nada por nuestra liberación según ese criterio, no obstante haber bastado en los Estados Unidos para hacer surgir una nacionalidad que recibiría con sorpresa y con un agrado muy relativo, el elogio de que sus mejores calidades son el producto de la colonización inglesa.

Y es indudable que ese desconocimiento, esa falta de información que los diferentes países de América tienen los unos de los otros, es la causa principal, si no única, que los inclina a la sospecha y los hace buscar el mutuo alejamiento como condición de su seguridad. Cuanto más vecinos son dos países, cuanto menos barreras naturales

interceptan las comunicaciones materiales, cuanto menos inconvenientes al conocimiento recíproco ponen la raza y el idioma, tanto menos fácil es que surjan entre ellos la suspicacia y el temor. Los Estados Unidos comprenden y conocen sin duda más al Canadá que a México, no obstante ser ambos países en igual modo sus vecinos. Los argentinos y los chilenos estamos en mejores relaciones después de la obra gigantesca que abrió un boquete en el hielo de los Andes para dar paso al Ferrocarril Transandino.

Lógicamente, pues, si de parte de cada uno se pone todo lo necesario para acortar esas distancias, abatir esas barreras y allanar las diferencias de orden étnico, si todas las naciones del continente se ponen a la obra de abrir una brecha en el hielo de la indiferencia que las separa, es posible que cada una de ellas llegue a mirar aún a la más distante, a lo menos como a su vecina de frontera.

Seguramente esa obra no puede ser tan instantánea como la de la dinamita; pero es tan segura y acaso más, porque nada deja librado al azar. La única condición es que trabaje en el terreno más fácil de sacudir y de moldear.

Inspira realmente muy poca fe el panamericanismo que sólo trabaja en las altas esferas de la política y del comercio, el que sólo se alimenta del intercambio de los productos y del oro de las transacciones bursátiles. En el mejor de los casos, su acción tiene que ser muy lenta y muy poco constructiva por lo mismo que está expuesta a sufrir constantes rectificaciones.

Sólo hay un camino firme y fácil por el que puede marchar ese principio a que América tiene que adherirse con todas sus energías y cada vez más. Ese camino es el que flanquean la escuela, el colegio, la universidad, la biblioteca, el periódico, el museo, todas aquellas instituciones, en fin, cuya, razón de ser es la educación del pueblo.

La educación de la juventud en todo el continente, necesita de una reforma fundamental, en el sentido de hacerla más conforme con el destino colectivo de los países que lo constituyen. No veo lejano el día en que por común deseo de los Estados americanos, se convoque un magno congreso cuya obra sea la de concertar esa reforma y llevarla a la práctica.

El día que ese congreso se ponga a la tarea de revisar la orientación que en cada país se ha dado a la educación y a la preparación de la juventud, nos sentiremos consternados todos por igual, ante nuestra larga ceguera de los propios intereses.

Dos hechos saltarán entonces a la vista con notable evidencia: Por una parte la estrechez del sentimiento nacionalista que hemos estado alimentando con tanto carifio a expensas del reconocimiento de las virtudes y grandezas que no han tenido por cuna nuestro propio suelo. Por otra, el absurdo de haber pedido demasiado a la Europa y haber distraído en recorrer su órbita, el tiempo que debíamos a nuestra propia América.

El que se detenga a considerar las tendencias de la educación en su país, tendrá que reconocer, si siente arder en él un sentimiento de amplia fraternidad americana, que estamos cometiendo con nuestra juventud el delito de imbuirla demasiado de sí misma. Su país, según esa educación le enseña, es el mejor del planeta, sus hombres no han conocido ni siquiera iguales entre los más grandes héroes del mundo entero, el porvenir le pertenece por el solo hecho de haber nacido en ese suelo privilegiado; la más inocente crítica de las instituciones le está vedada como un delito, la comparación de su país con los demás, ha de hacerla en la inteligencia de colocarla en lo más alto de la escala; el optimismo, pero un optimismo poco ilustrado y sistemático es el norte de una educación que, con el nombre de nacionalista ha alcanzado inusitada boga desde Alaska hasta el Cabo de Hornos.

Fuera de esa tarea que la escuela se cree obligada a llenar, si emprende otra, si se propone infundir en el niño admiración o simpatía por otros pueblos, si llama su atención hacia la naturaleza, la riqueza, el adelanto de otros países, éstos han de ser los del viejo continente. Y ello es lógico en las actuales condiciones.

Por lo que pasa en mi país puedo decir que la historia y la geografía de América son las menos interesantes para maestros y alumnos pero ¿cómo culparlos? ¿En qué

biblioteca encontrar un libro que ilustre la fauna y la flora de las Antillas o de Bolivia? ¿Quién ha pintado para los niños las maravillas naturales de las selvas del Amazonas o del Canadá? ¿Se tiene acaso algo concreto respecto a la vida de los *pioneros* del Oeste, preparado para el paladar de un niño sudamericano? Es más fácil hablarles de los lapones que de los indios de Alaska, del Rhin que del Orinoco, del San Gotardo que del Chimborazo, de los triunfos de Napoleón que de los que ha obtenido sobre la naturaleza la constancia y la industria empeñadas en cortar el Istmo de Panamá. Cuando se enseña el inglés es leyendo a Shakespeare o a Macaulay, y no a Longfellow o a Emerson y cuando se estudia la legislación, es la antigua ley romana la que se absorbe, no la de las nuevas y libres instituciones de los Estados Unidos.

No creo aventurarme mucho al afirmar que precisamente lo que ocurre en mi país está ocurriendo con los mismos pormenores, en el resto del continente; y que los jóvenes americanos que se enorgullecen de saber cuantos kilómetros cuadrados mide una capital europea de tercer orden, se ruborizan de su ignorancia cuando alguien les hace la corriente pregunta de cuales son las riquezas naturales de Cuba o las particularidades del clima en México.

¿Es de extrañar acaso que tales jóvenes al abandonar el colegio o la universidad estén preparados tan sólo para sentir y apreciar el propio país, y a lo sumo los del viejo continente? ¿Qué recuerdos de momentos gratos a través de las investigaciones escolares les habrá dejado el estudio superficial de los otros países de América? ¿Qué cuadros de la belleza de América habrán dejado impresiones imborrables en la placa virgen de su imaginación de adolescente? ¿Qué emociones juveniles habrá hecho vibrar las páginas de un autor americano? ¿De qué sorprenderse entonces si sienten repugnancia por leer un libro o una revista en que han colaborado individuos de un pueblo que nada tiene de común con el suyo, que les hablan de una tierra donde no hay nada digno de ser descrito o de una raza que vegeta sin haber producido jamás un hecho digno de ser registrado?

Si los azares de la vida llevan a uno de tales jóvenes a ese país y su espíritu es excepcionalmente claro y desapasionado, sentiráse realmente confundido al hallar tesoros de que nadie le había hablado antes, al comprobar que en aquel pueblo que le habían enseñado a mirar como superficial o indolente, están en actividad fuerzas intelectuales y materiales acaso superiores a las que actúan en su propio país, al comprobar que aquellos hombres obran movidos por ideales idénticos a los que él ha aprendido a venerar.

Y sobre todo esto, encontrará que aquel país está mucho más cerca del suyo de lo que jamás hubiera soñado, que sus destinos son comunes, que trabaja con los mismos problemas de la democracia que su propio país se halla muy lejos de haber solucionado por completo, que aquel país es más su patria, en fin, que la Europa; y dificultado a cada paso en su penetración con él, gracias a la deficiente preparación con que la escuela lo ha equipado, no podrá menos de hacer a la educación recibida, un amargo reproche. Uno de esos instintos salvadores que dormitan en las razas lo mismo que en los individuos despertará en él la avidez de penetrar aquel mundo que siempre pasó ante sus ojos como una nebulosa indefinida. El estudio de su suelo, tan poco interesante cuando lo hacía en el árido texto de un autor que nunca lo vió, se tornará una fuente de goces mientras recorre sus caminos en el ferrocarril o el automóvil; ciudades que había imaginado como un hacinamiento de fábricas ennegrecidas por el humo, se le revelan llenas de rincones de adorable frescura donde sería para él un regalo levantar su propio hogar; la historia de aquel pueblo que vivía en su recuerdo confundida con la de otro cualquiera, es una epopeya inconfundible no bien la escucha de boca de los que la han vivido. Una ruina cuya leyenda le refieren, llega a serle tan querida como cosa propia y la visita a un museo histórico le hace experimentar verdadera veneración por los objetos que allí se conservan.

Es natural, pues, que tras experiencias tan hondas, el espíritu se rebele contra una educación que lo ha condenado a esa ignorancia tan depresiva.

Y acaso, en su sano deseo de salvar a los que vienen detrás de él, de esa mutilación impuesta a su juicio, haga uso de la tribuna, del periodismo y del libro para llevar al conocimiento de los demás lo que él aprendió a costa de tan ruda sacudida.

Pero desgraciadamente, el caso del viajero de espíritu claro y sin prejuicios no se produce siempre. También puede ocurrir que tal viajero, mal preparado por la educación para comprender lo que nadie se ha preocupado de poner en el terreno de su curiosidad, se desvíe lastimosamente en sus juicios y apreciaciones. De esto son un triste exponente muchos relatos de viajeros, que corren por el mundo, difundiendo absurdos cuando no probando en su autor una candidez que sólo redime la buena fe que la inspira.

Por lo que a mi país respecta, es común observar en los relatos de viajeros procedentes de otros países americanos, el afán por llegar a la descripción de ciertos tipos y costumbres originales, las únicas cuya noticia ha salvado las fronteras. Rara vez se detienen a recoger informaciones que les harían caer en la cuenta de que tales tipos y costumbres se han borrado ya de nuestra vida nacional, hasta el punto de ser motivo de curiosidad para nosotros mismos.

Viajeros hay que vuelven de Sud América decepcionados de no haber visto selvas vírgenes a las puertas de la ciudad, o de haber encontrado que la raza es demasiado parecida a la suya, y que hasta se sienten como defraudados en sus previsiones cuando comprueban que poseemos los mismos adelantos de la vida moderna, de los que no podrían pasarse en su país.

Y otro tanto nos sucede a los de la América Latina con respecto a los Estados Unidos, por ejemplo. Las impresiones que un sudamericano recibe en este país, después de haber recorrido la Europa, rara vez son justicieras. Tan compenetrado está de la idea de que los moldes europeos son los únicos perfectos, que cuanto no entra en ellos le choca y desagrade. La originalidad resulta a sus ojos, deseo de señalarse; el valor de innovar, excentricidad; la liberalidad, capricho de plutócratas; el desprecio de las fórmulas convencionales, discutible desenfado. Y todo esto, precisamente porque su educación europea, robustecida luego por el ambiente europeo que la vida sudamericana respira, lo ha preparado mal para comprender todo lo que sean rumbos nuevos de sociedades nuevas también.

La recíproca no es menos cierta, felizmente. Los sudamericanos que visitan los Estados Unidos y tienen la calma y el deseo de buscar la verdad por sí mismos, haciendo a un lado las primeras impresiones, reciben con verdadero entusiasmo la comprobación de que la sociedad que habían creído metalizada, despliega ante ellos los tesoros de su imaginación y de su piedad, cuando aquellos individuos que sólo creían superiores en el arte de fundir el acero, le enseñan el arte de llevar una vida con todos los refinamientos de una cultura superior, que una educación absurda le había acostumbrado a mirar como privativa de la raza latina.

A su vez, y por lo que a nuestro país se refiere, he tenido ocasión de oír a los mismos viajeros defraudados en sus esperanzas de ver tigres a las puertas de Buenos Aires, expresarse con entusiasmo de nuestros adelantos y de nuestras costumbres y hasta aventurar comparaciones en las cuales su país no ocupaba siempre lo alto de la escala, como la escuela les había enseñado.

El espíritu de justicia es, felizmente, más universal y más fuerte de lo que habría derecho a esperar, después de la ruda sofrenada que le da la educación. Aplastado por la falta de ocasiones de ejercitarse, revive como una planta llena de vitalidad bajo el pie del transeunte, no bien el sol de la verdad deja caer sobre ella un rayo de su calor estimulante.

Es posible pues esperar todo del acercamiento de los países, de la divulgación en el pueblo de las virtudes y fuerzas que las demás naciones del continente poseen; y la aceptación de tales hechos, no solo nos salvará del peligro de la gangrena por aislamiento, a que el miembro más sano de ese organismo está condenado si no lo alimenta la rica savia de la simpatía, sino que el reconocimiento de las calidades

ajenas que florecen tan cerca de sí, despertará en cada pueblo el más saludable de los estímulos.

Nadie se perjudicará con ello; tal vez se esfumarán un tanto los contornos algo duros y precisos que bosquejan hoy cada una de las nacionalidades dentro del continente; pero ¿hay en esto algo que ninguno de nosotros pudiera lamentar? Si las fronteras de nuestro propio país se extienden y se esfuman, es para nuestro propio engrandecimiento, porque nadie es más grande que aquél que puede darse más.

CONCLUSIÓN.

América debe apresurarse a convocar un congreso con la función única de revisar la orientación de la enseñanza pública en sus diversas ramas y arbitrar los medios de reformarla.

Dicho congreso deberá estudiar y proponer a los respectivos gobiernos la forma de coordinar de común acuerdo, un principio de educación general para todo el continente sobre la base de conceder especial importancia al conocimiento recíproco de las naciones americanas.

Al mismo tiempo estudiará la mejor manera de acrecentar y mejorar las fuentes necesarias a ese estudio y la de promover la producción de obras americanas de primer orden destinadas a la juventud.

LA INSTRUCCIÓN PRIMARIA EN SUS RELACIONES ECONÓMICAS CON LA LOCALIDAD Y EL ESTADO.

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INTRODUCCIÓN.

El relativo atraso de la instrucción primaria en las naciones latinas de nuestro Continente es debido, entre otras causas, también fundamentales, a la incapacidad de estos países para destinar a aquella rama de la enseñanza recursos en cantidad suficiente.

Y esta incapacidad, a su vez, tiene en parte origen en la falta de un sistema adecuado de provisión de rentas para escuelas. He ahí porqué el problema de que entro a ocuparme es de enorme trascendencia para el porvenir de la educación popular, no ya sólo en los Estados Unidos, donde se ha hallado él de actualidad en todo tiempo, sino especialmente en el resto de la América.

Parece innecesario advertir que, tratándose de un problema de acción, no es tanto—digan lo que quieran los economistas de gabinete—una teoría lo que debe guiarnos en su solución, sino más bien la experiencia, los hechos. Precisa, pues, para arribar a alguna conclusión válida, esbozar los regímenes en práctica a este respecto y comparar sus resultados. Y al bosquejar estos diversos sistemas, necesariamente debe considerarse una posibilidad no contemplada en el título del tema propuesto: la posibilidad de que la enseñanza primaria sea costeada, no mediante el esfuerzo conjunto del Estado y sus unidades subordinadas, sino exclusivamente por el primero—es el caso de Chile—o por estas últimas.

A. EL PROBLEMA EN GENERAL.

I. SISTEMAS FUNDAMENTALES.

El problema de la proporción en que el Estado y las localidades debieran contribuir al sostenimiento de la instrucción primaria y de los factores que convendría toma-

en cuenta al fijar esa distribución, ha recibido, como el problema de la administración escolar, soluciones prácticas de lo más variadas y que muestran toda la gama desde la descentralización más completa a la centralización más absoluta.

De estas soluciones, la primera radical, o sea la abstención total del Estado y el sostenimiento exclusivo de las escuelas por impuestos locales, o directamente por los beneficiados, pertenece, puede decirse, a la historia. La aplicación del concepto moderno del Estado ha ido gradualmente eliminándola. La educación popular es cosa demasiado grave para que pudiera seguir confiada por completo en manos de los particulares y de las autoridades locales, es decir, abandonada a los prejuicios de partido, al sectarismo, o a la ignorancia, a la incuria, a las rencillas y cortas vistas lugareñas; demasiado trascendental para que el gobierno pudiera desentenderse de su deber de intervenir en ella fijándole normas determinadas y contribuyendo a costearla y fomentarla. Nacido—en la época moderna—con un propósito religioso, o si se quiere sectario, en los días de la Reforma, el movimiento de intervención del Estado se vigoriza en los siglos siguientes, en especial en el curso del XIX, a medida que el principio, hoy vulgar, de que el bienestar de la nación depende del grado de eficiencia de sus individuos, penetra en la mente de los gobernantes. Con todo, la intervención económica del Estado no ha llegado en algunos casos sino muy tarde: no es tan antigua en Massachusetts la ley que abolió el régimen de distritos autónomos, ni en los Estados Unidos en general, tan antigua la creación de “fondos” escolares, y data apenas de 1902 la reforma constitucional que estableció y reguló en Suiza el auxilio del Gobierno federal a las escuelas cantonales. Si es cierto que sería dificultar hoy el caso de un país civilizado que deje pesar exclusivamente sobre los gobiernos locales la responsabilidad del costo y administración de las escuelas, no es difícil, en cambio, citar casos en que, por una parte, las comunas abdican de mala gana el control de la enseñanza y en que, por otra, con igual mala voluntad asume el Estado la obligación de contribuir a costearla.

El sistema opuesto, o sea el de sostenimiento exclusivo por el Estado, no es un régimen histórico. Entre los ejemplos que de él pueden citarse figuran el de Francia, país, sin embargo, en que la vigencia de tal régimen presenta algunas atenuaciones, y Chile, sobre todo Chile. Se trata en cada uno de estos casos de sistemas recientes, en que se ha roto al parecer violentamente con la tradición, y que arrancan su origen de causas diversas. En Francia, la influencia napoleónica y la tendencia de la República a la gratuidad, obligación y secularización de la primera enseñanza, principios incorporados en la legislación nacional desde 1881 a 1904, han conducido al sostenimiento de las escuelas, en parte principal, por medio de impuestos cobrados por el Estado y destinados especialmente a ellas. Y en Chile, las experiencias nada felices realizadas con el régimen parcialmente local han traído como consecuencia la absorción por el Estado de la totalidad de las funciones docentes, abdicando las comunas—en una época en que éstas no alcanzaban aun la clara noción de la solidaridad de intereses entre la generación adulta y las nuevas—sin queja y hasta sin darse de ello cuenta, todo derecho y todo deber relativos a la educación. Es por eso que, allí, el Estado, a pesar de disposiciones legales en contrario, costea hoy por sí solo la instrucción primaria, deduciendo los fondos de sus rentas generales, es decir, en la misma forma en que ha costeado siempre la enseñanza secundaria, superior y especial, ramas todas, como se sabe, completamente gratuitas.

Entre estos dos extremos se encuentra el régimen que podría llamarse mixto—el medio que constituye virtud entre abstención y exceso—y en conformidad al cual, tanto el Estado como las localidades, y no exclusivamente una u otra entidad, concurren al sostenimiento y fomento de la primera enseñanza. Es este el régimen más general, lo cual no significa—aun cuando podamos considerarlo desde luego como el mejor—que su implantación no ofrezca inconvenientes, o por lo menos, que su éxito no dependa de las circunstancias locales.

Obsérvase en él, como veremos, la mayor variedad, no sólo en cuanto a las fuentes de que se obtienen los fondos y a la manera de colectarlos y distribuirlos—cuestiones que por el momento no interesan—sino sobre todo en lo que respecta a la proporción entre los aportes de las localidades y el Estado.

II. CENTRALIZACIÓN Y DESCENTRALIZACIÓN.

En general, cada uno de estos sistemas presenta sus ventajas y desventajas. Unas y otras nacen, sobre todo, de los diferentes regímenes de administración que esa diversidad de sistemas trae consigo. Porque la legislación escolar comparada revela el hecho—natural, por lo demás—de que el grado de ingerencia del Estado o del poder local en la administración y gobierno de las escuelas, guarda relación con la cuota que cada uno de ellos aporta a su sostenimiento. Mientras la instrucción primaria fué costeada exclusivamente por impuestos locales, el control del Estado sobre ella ha debido, como durante la Edad Media en Europa y otro tiempo en Massachusetts, ser nulo o casi nulo; pero, a medida precisamente que el gobierno central eleva el monto de sus cuotas, crecen también sus facultades, hasta llegar a ser, en casos como el de Chile, omnipotente su acción y nula o casi nula la acción de los poderes locales. Y la tendencia que se observa en los estados modernos a aumentar cada año la proporción en que contribuyen a los gastos de la primera enseñanza, parece, justamente, obedecer—a juzgar por lo que en la práctica sucede—al propósito de mejorarla, no sólo acrecentando sus rentas, sino asegurándose el gobierno central una mayor ingerencia en su administración y dirección. Los resultados que se derivan de la mayor o menor centralización o descentralización administrativa de las escuelas, pueden, por lo tanto, servirnos para apreciar en general las ventajas y desventajas de cada uno de los sistemas de renta a que nos hemos referido.

La centralización en materia de enseñanza—que implica el sostenimiento exclusivo o casi exclusivo de las escuelas por el Estado—favorece la uniformidad, y con ella, introduce la economía y facilita la coordinación de las instituciones y la simplificación del rodaje administrativo; libra a las escuelas y a los maestros de los peligros que para ellos podrían traer las diferencias sectarias, la política pequeña, la desidia y la falta de preparación de las autoridades locales, y permite, en cambio, seguir una política educacional definida y durable, fijar normas igualmente elevadas en toda la extensión del país así a las escuelas como a los maestros, formar carrera al profesorado y aumentar la eficacia de su labor procurando a todos sus miembros una situación económica compatible con la dignidad de la misión que desempeñan. La centralización, además, contribuye a fortificar el sentimiento de solidaridad nacional y, lo que es más importante que todo, permite ofrecer a toda la generación nueva del país—resida donde resida—la igualdad de oportunidad educativa, sin la cual la otra igualdad, la que las leyes proclaman, carece de aplicación y aun de sentido. Y, finalmente, no es la menor de las ventajas del régimen centralizado, la facilidad que da para el empleo de especialistas—visitadores generales y técnicos, estadísticos, etc.—en la dirección e inspección de la enseñanza.

La descentralización, en cambio, estimula poderosamente el interés del pueblo en las escuelas, ya que, sintiendo que contribuye más o menos directamente a costearlas, se inclina cada ciudadano a considerarlas como cosa propia, y ese interés, lazo que une a la escuela con el hogar y la comunidad, es la fuerza que transforma a aquélla, de simple mecanismo, en institución con vida. Ventajas propias del sistema descentralizado—si bien no imposibles de encontrar en un régimen centralista más o menos perfecto—son, además, la adaptabilidad de la enseñanza a los variadísimos intereses y necesidades locales y regionales, vale decir, flexibilidad de planes de estudios, programas, métodos, horarios, temporadas de vacaciones, etc.; la oportunidad que ofrece para los ensayos de regímenes nuevos; la emulación que desarrolla entre las localidades, y el carácter menos oficial, más familiar, si se quiere, que toman las relaciones entre los funcionarios encargados de dirigir la enseñanza y el público.

Los defectos de cada uno de estos sistemas están precisamente, con las salvedades hechas más arriba, en la carencia de las virtudes propias del otro.

El sistema ideal será, pues, el que, junto con proteger a las escuelas contra las deficiencias y los peligros de la dirección local y a la vez contra las deficiencias y los peligros de la dirección centralizada, les permita sacar partido de las especiales ventajas de una y otra. Puédese, por eso, concluir que, en general, el sistema de administración mixta es el más adecuado y que, de consiguiente, y en atención a la correspondencia que necesariamente guardan el grado de control sobre las escuelas con la proporción en que se contribuye a costearlas, deben concurrir a su sostenimiento las dos entidades que conviene tengan parte en su dirección: el estado y los poderes locales.

III. LA PROPORCIONALIDAD.

Se presenta ahora el problema de la proporción en que han de contribuir al sostenimiento de la enseñanza primaria la localidad y el Estado, y de los factores que han de tomarse en cuenta para fijar el aporte de cada uno.

Cuestión es esta que no admite sino soluciones de carácter muy general, como quiera que sus factores—raza, cultura, tradición e historia, gobierno y concepto de sus funciones, etc.—varían en una extensión considerable. Lo más que puede intentarse es mostrar la política seguida al respecto en aquellos países de sistema mixto que se preocupan especialmente de la educación, y fijar la tendencia que en la generalidad de ellos domina.

En Francia, la mayor parte del costo de las escuelas—alrededor de dos tercios del total en 1910—recae sobre el Estado; si bien los dineros con que éste concurre no se deducen de rentas generales, sino de impuestos nacionales especialmente destinados al objeto. Los departamentos pagan solamente los servicios de inspectores de talleres escolares, y de especialistas para la enseñanza agrícola, comercial e industrial suministrada en las escuelas; y las comunas, por su parte, no costean directamente sino los gastos de edificación escolar, de mobiliario y equipo, de calefacción y luz, la residencia del maestro, los sueldos de algunos instructores especiales y ciertos gastos menudos.

Pero Francia—lo hemos dicho—es la excepción.

En Prusia, de acuerdo con la Constitución de 31 de Enero de 1850 y la ley sobre sostenimiento de las Escuelas Públicas Primarias, de 28 de Julio de 1906, “los fondos para la erección, sostenimiento y fomento de las escuelas públicas, se proveen por las comunidades locales, y cuando se pruebe la incapacidad para hacerlo, puede el Estado dar ayuda suplementaria * * *”; “la erección y mantenimiento de las escuelas primarias públicas recae, con las excepciones que esta ley establece * * * en las comunidades municipales y los distritos independientes * * *”; “donde la incapacidad de un distrito escolar para sufragar el costo del mantenimiento de una escuela primaria, es probada, se concede subsidios por el Estado.” Dentro de estas limitaciones impuestas a la contribución del Estado, la cuota del gobierno central ha ido, sin embargo, en aumento, hasta llegar en 1911 a constituir una cuarta parte del total de gastos de instrucción primaria.

En Italia, la contribución del Estado ha crecido en proporciones tales en los últimos años que, de cuatro millones de liras que destinaba aquél a las escuelas en 1899, llegó a invertir en ellas 24 millones en 1910, cuando la cuota de las comunas alcanzaba a 136 millones. La ley de 4 de Junio de 1911, junto con asegurar al Estado una mayor ingerencia en la dirección de la enseñanza primaria, tiende a aumentar considerablemente las cuotas de gobierno central.

También en Bélgica subía la cuota del Estado: en 1906 había alcanzado a un 41.4 por ciento del total.

En Inglaterra, país en el cual, como se sabe, la intervención directa del gobierno en el sostenimiento y administración de las escuelas es reciente, los fondos acordados por el Parlamento alcanzaban ya, en 1909, más o menos a la mitad del costo total.

La tendencia a aumentar la contribución del gobierno, en los países europeos de régimen escolar no centralizado, es general. A los ejemplos citados podrían agregarse el de Dinamarca, el de España y otros.

Variedad semejante a la que ofrecen las naciones europeas, presentan los países de este Continente.

En los Estados de la Unión Americana, acerca de cuyas condiciones en este respecto es más fácil obtener informaciones exactas, los fondos destinados a la instrucción primaria se descomponían en 1912, según reza el informe del Comisionado de Educación, en la siguiente forma:

	Por ciento.
Fondos y rentas permanentes.....	3.3
Impuestos del Estado.....	15.3
Impuestos locales.....	74.0
Otros recursos.....	7.4

La proporción en que los diversos estados contribuyen, varía desde un 2 por ciento, que suministraban, derivados de "fondos" permanentes y otras fuentes, los de Massachusetts y Iowa, a un 50 por ciento, cifra alrededor de la cual fluctuaba la cuota central en Michigan, Alabama, Montana, Maine, Georgia. También aquí, la tendencia de los estados menos centralistas, como lo revela aun el examen más somero de los informes del Bureau de Educación, es a aumentar año a año la cuota con que contribuyen.

Los datos que preceden y muchos otros que podrían aducirse, autorizan para concluir que en los países que practican el régimen mixto en lo referente al costo y administración de la enseñanza primaria y cuyos sistemas de educación son dignos de estudio, la contribución del Estado para el sostenimiento de las escuelas tiende a aumentar y aun a equilibrar los fondos que al mismo objeto destinan las comunidades locales.

IV. FACTORES DE LA DISTRIBUCIÓN.

Esta comprobación, que permite establecer una norma ideal—la de igualdad—para la participación que en el costo de la primera enseñanza cabe al Estado y a la localidad, no excluye la consideración de los factores que deben tomarse en cuenta, por una parte, para fijar en cada país en particular la cuota que a cada una de esas entidades corresponde, y, por otra, para fijar con respecto a cada comunidad local la proporción en que ella y el Estado se distribuirán los gastos del mantenimiento de las escuelas.

Entre los factores del primer grupo deben considerarse fundamentales—sobre todo si se admite el principio de la correspondencia entre la cuota con que se contribuye y el derecho que se tiene a participar en la administración—la historia, el grado de evolución democrática y de cultura general, la homogeneidad de raza, la eficacia de los gobiernos locales, el hábito de contribuir directamente a los gastos escolares y el grado en que las diferencias de secta y de partido apasionan a los ciudadanos e influyen sobre su actitud ante los problemas de enseñanza. Cualquiera que sea su concepto ideal acerca de la proporción en que deben contribuir a costear la primera enseñanza el Estado y las localidades, no podrá el legislador desentenderse de las condiciones recién enumeradas sin exponerse a un fracaso. Es tan evidente la necesidad de tomar en cuenta esos factores, que toda demostración sería superflua. No hace falta, pues—y sería cruel en estos momentos—examinar el caso de Bélgica, en donde la política de *laissez faire* del gobierno, concordante con la cuota, escasa para las circunstancias, con que concurre al sostenimiento de las escuelas, ha permitido dar a éstas un carácter sectario, convirtiéndolas así en una presa que han solido disputarse con ardor en las comunas, clericales y liberales. Ni precisa tampoco extenderse en la consideración de algunos tristes ejemplos de nuestra América, en que, o indiferentes o escasos de recursos o anhelosos de trasplantar al propio país regímenes extraños, los gobiernos centrales hicieron gravitar sobre las localidades la mayor parte de las cargas de la instrucción primaria, sin ver que el gobierno local era deficiente, que existían abismos entre razas y clases, que la masa de la población era analfabeta y que, ocultos tras el

velo del amor por la educación pública, acechaban en cada jurisdicción escolar los intereses de secta y de partido.

La regla, pues, en lo relativo a los factores de que venimos ocupándonos, es, a nuestro juicio, la siguiente: mientras más desfavorables se presenten estos factores, mayor debe ser el control que el estado ejerza sobre la enseñanza y mayor, por lo tanto, la cuota con que contribuya a costearla, y, a la inversa, mientras más favorables sean aquellas condiciones, menos necesaria es la intervención del Estado.

Otra cosa es tratándose de determinar la proporción en que, con respecto a cada localidad en particular, han de distribuirse los gastos entre ella y el Estado. Las normas seguidas a este respecto son también en extremo variadas y algunos de los planes puestos en práctica, bastante complejos. En general, sin embargo, o las localidades (provincias, departamentos, comunas) imponen una contribución especial cuyo monto fija por lo común el Estado y éste, sea deduciéndola del "fondo" escolar, de rentas generales o de un impuesto también especial; concurre con el resto, o bien el Estado fija la cuota que dará a la localidad y ésta se procura lo que falta.

La contribución del Estado es determinada según las siguientes bases, empleadas singularmente o en combinación: avalúo de la propiedad sujeta a impuesto, población escolar, matrícula, asistencia media, número de maestros. Se observa ya también la tendencia a destinar sumas especiales para ayudar a las localidades pobres—a fin de dar a sus niños iguales ventajas que a todos los demás del país—y para premiar a aquéllas que, en proporción a sus recursos, gastan particular empeño por alcanzar y aun sobrepasar el mínimo de las exigencias del Estado. El estudio comparativo de estos diversos sistemas—omito detalles en obsequio a la brevedad—me lleva a concluir que el censo escolar, la asistencia media y las dos bases últimamente mencionadas, la de la necesidad y la del esfuerzo—bases, en realidad, la una, de la igualdad de oportunidad y la otra, del progreso—son, entre las normas por que puede reglarse la contribución del estado, las más fáciles de aplicar, las más justas y las que mejor consultan el interés de la enseñanza.

El Estado debería, pues, asignar a cada comuna (o departamento)—deduciéndola, sea del "fondo" escolar, si existe, o de impuestos especiales o simplemente de rentas generales,—cierta suma por alumno de población escolar y otra algo mayor por alumno de asistencia media, y obligaría a los municipios (o departamentos) a concurrir con una suma que se obtendría principalmente por medio de impuestos locales especiales cuyo monto fijaría el Estado. Este, además, concurriría con una cantidad adicional al costo de las escuelas en aquellas localidades en que la vida es excepcionalmente cara o difícil; ayudaría a completar su cuota a las comunas pobres, y premiaría con recursos extraordinarios a las que, en proporción a los medios de que disponen, hicieran sacrificios por el mejoramiento de sus escuelas. Comisiones especiales estudiarían las condiciones de las diversas localidades y recomendarían a aquéllas que, por cualquiera de esos capítulos merecieran atención del gobierno central, fijando, al mismo tiempo, la suma adicional que éste debería destinar a cada una. El Estado, finalmente, garantizaría los empréstitos que las Municipalidades levantarán con el objeto de cubrir su cuota tratándose de gastos extraordinarios considerables, como la construcción de edificios escolares y otros.

B. EL CASO DE CHILE.

I. ANTECEDENTES.

La norma que se ha propuesto relativa a la proporcionalidad, carecería de aplicación, aun aproximada, tratándose de aquellos países como Chile en que impera un régimen totalmente centralizado y que, convencidos de las ventajas del sistema mixto, procedieran a imponer a las localidades la obligación de contribuir al sostenimiento de la primera enseñanza. La implantación de un sistema semejante al que hemos considerado ideal, faltando las condiciones necesarias para su correcto funcionamiento, podría producir—hay de ello ejemplos, lo hemos visto—desastrosos resultados.

Chile, nacido a la vida independiente—como la generalidad de sus hermanas de Hispano-América—sin otras escuelas que unas pocas—pocas e inadecuadas—particulares o costeadas por los cabildos o por comunidades religiosas, pasó la infancia de su libertad bajo el régimen de administración local en materia de instrucción primaria. La tendencia del Estado a intervenir en las escuelas es, sin embargo, evidente desde el principio: se manifiesta por primera vez en el decreto de 13 de Junio de 1813, que pretende hacer obligatorio en las localidades el establecimiento de escuelas gratuitas para varones y niñas; se acentúa y toma caracteres definidos en la Constitución vigente de 1833, al declararse en ella que “la educación pública es una atención preferente del Gobierno” i que “habrá una Superintendencia de educación pública, a cuyo cargo estará la inspección de la enseñanza nacional y su dirección, bajo la autoridad del Gobierno.”

La pobreza del Erario no permitió, sin embargo, al Estado contribuir desde el comienzo al sostenimiento de la instrucción primaria y justificar así su intervención en lo que a las escuelas se refiere. Pero, a medida que crecieron sus recursos, empezó a echar sobre sus hombros la tarea. Sus cuotas, muy modestas al principio (\$7,717 en 1830), fueron elevándose año a año en tal proporción que pronto, no sólo igualaron, sino aun superaron a los aportes locales. Y a la vez que aumentaba la contribución del Estado, y con ella la intervención de éste en el gobierno de las escuelas, la contribución local disminuía hasta llegar a ser, ya en 1882, en que las Municipalidades concurren, por término medio, apenas con un 2.66 por ciento de sus rentas, completamente ineficaz, y algunos años más tarde, a pesar de las disposiciones expresas de la legislación, casi absolutamente nula.

La centralización administratava y de dirección había, por lo demás, marchado paralela con el aumento de la contribución del Gobierno y—debe decirse—también con la creciente indiferencia de los poderes locales por la suerte de las escuelas. La Ley Orgánica de 1860 estableció definitivamente la enseñanza primaria bajo la inspección del Estado, y el Reglamento General de Instrucción Primaria de 1898 borró los últimos rastros de la intervención local.

Es precisamente con motivo de aquella citada ley de 1860, o más bien con motivo de los proyectos que la precedieron, que se discutió en Chile el problema de la renta y administración escolares. Tanto el ilustre publicista don José Victorino Lastarria como el que había de ser después gran Presidente de la República, don Manuel Montt, autores respectivamente de un proyecto y de un contra-proyecto de Ley Orgánica, sostenían que las localidades debían concurrir al mantenimiento de las escuelas; pero, al paso que el primero opinaba que no debían crearse impuestos especiales para ese objeto y que “en los países jóvenes” la educación primaria es atención que incumbe más bien al Estado que a los poderes locales, el segundo, inspirado en Sarmiento y, a través de éste, en el ejemplo de los Estados Unidos, era partidario a la vez del impuesto especial y del régimen exclusivamente local desde el punto de vista administrativo y financiero, bajo la superior dirección, eso sí, del Estado. La ley aprobada (fué propuesta por el señor Montt durante su gobierno) concluyó por sancionar el sistema mixto y por establecer el impuesto especial. En su Título II, De la Renta, artículo 12, dice esta Ley que la instrucción primaria debe ser costada:

“1°. Con la suma que el Tesoro Nacional aplicará anualmente a este objeto.

“2°. Con las cantidades que de sus propias rentas destinarán anualmente al mismo fin las Municipalidades.

“3°. Con el producto de las fundaciones, donaciones y multas aplicadas a la instrucción primaria, y con el de las mandas forzosas que se recaudaren en cada departamento.

“4°. Con el producto de una contribución que se establecerá con este único y exclusivo objeto, y cuyas bases se fijarán por una ley, ya de una manera general, ya de una manera especial, para cada provincia o departamento.”

Se reconoció, además, en la misma Ley, la participación de los municipios en la administración de la instrucción primaria, estableciéndose, así, al mismo tiempo, que su vigilancia y dirección correspondía a una Inspección compuesta de un Inspector General y de Visitadores provinciales nombrados por el Presidente de la República. Las Municipalidades podían designar comisiones encargadas del cuidado y vigilancia de las escuelas, pero sin facultades para alterar las reglas prescritas por la Inspección.

De las cuatro fuentes de rentas indicadas en el citado artículo 12, la segunda, como se ha visto, disminuyó progresivamente hasta llegar a ser nula; la tercera nunca produjo gran cosa, y la cuarta, condicionada como se hallaba por la expedición de una ley posterior, que hasta ahora no se dicta, ha quedado simplemente en el papel. Es la primera de estas fuentes, se ha dicho también ya, la única de que se derivan hoy día los fondos para el sostenimiento y fomento de las escuelas.

Las disposiciones referentes a la administración local y a las prerrogativas de cuidado y vigilancia que la Ley reconocía a los municipios, han quedado, lo repetimos, abolidas de hecho, parte en virtud de disposiciones posteriores (Reglamento de 1898), y sobre todo en razón de la incapacidad y de la desidia de los poderes comunales para ejercer tales funciones.

II. HACIA LA DESCENTRALIZACIÓN.

Hoy por hoy, sin embargo, se considera necesario recurrir de nuevo a los municipios: tal es, por lo menos, la opinión del actual Gobierno, manifestada en ocasión solemne—en la sesión de apertura del Congreso el 1º de Junio de 1914—por boca del primer magistrado de la Nación. Y esa necesidad nace sobre todo de la urgencia de crear a la enseñanza nuevos recursos, a fin de llegar pronto al establecimiento en forma eficaz de la educación primaria obligatoria. Pero el problema no es fácil. En efecto, ¿cómo implantar de hecho el régimen mixto en un país donde las localidades han perdido ya la tradición—la costumbre, diríamos—de contribuir al sostenimiento de la instrucción primaria y de colaborar en su administración? ¿Cómo implantarlo sin exponer a las escuelas y a los maestros a la influencia malsana del sectarismo, del partidismo y aun de los prejuicios de clase? La respuesta no puede ser sino una: proceder a una descentralización gradual y paulatina.

No se podrá, por el momento, dar a las Municipalidades poderes de vigilancia y administración sobre los servicios corrientes de las escuelas, ni imponer a los habitantes de las comunas cargas nuevas que la falta de hábito les haría sentir pesadas. Pero servicios auxiliares, de esos que en sistemas educativos aun no bien desarrollados pasan por extraordinarios, podrían muy bien quedar desde luego siempre bajo la superior dirección del Gobierno, y con sujeción a las normas que éste dictara, en manos de las comunas. Tales serían, por ejemplo, las escuelas de instrucción primaria y de perfeccionamiento para adolescentes y adultos—que unos pocos municipios, el muy progresista de Concepción, entre otros, sostienen ya en la actualidad—campos de juego, asistencia a los niños necesitados, bibliotecas populares, etc. De cargo de los municipios podrían ser también la dotación de talleres de economía doméstica para las escuelas de niñas y de trabajos manuales para las de varones. Por último, convendría imponer también a las comunas la obligación de ceder terrenos para escuelas y la de contribuir, garantizando el Estado los empréstitos que para el caso levantarán, con un 50 por ciento al costo de la edificación escolar en sus respectivos territorios.

Los fondos necesarios para estos gastos podrían las Municipalidades deducirlos de sus rentas generales, u obtenerlos cobrando parte del impuesto adicional de haberes que percibe ahora temporalmente el Gobierno, una vez que éste lo suspenda, o bien cobrando lisa y llanamente el impuesto personal de uno a tres pesos—otra disposición relativa a rentas escolares que ha quedado hasta aquí en el papel—a que les da derecho, en sus artículos 35 y 36, la Ley de Organización y Atribuciones de las Municipalidades y que ésta quiere se destinen exclusivamente a la enseñanza primaria.

A medida que las localidades se habituaran a sufragar estos gastos y creciera su

interés por las escuelas, que aumentara la cultura general y el poder municipal se robusteciera y perfeccionara, irían creciendo la cuota y las atribuciones administrativas comunales, hasta llegar a ver realizado alguna vez ese equilibrio ideal de responsabilidad y cooperación entre el poder central y el local, a que tienden hoy los esfuerzos de los pueblos más cultos de la tierra.

CONCLUSIONES.

A. EL PROBLEMA EN GENERAL.

1. Conviene que la instrucción primaria sea sostenida mediante el concurso de las dos entidades que deben tener parte en su dirección, el Estado y las comunidades locales.

2. Se reconoce como ventajosa la tendencia que manifiestan los países de régimen mixto cuyos sistemas de educación son dignos de estudio, a aumentar la cuota con que el Estado contribuye al sostenimiento de las escuelas primarias, hasta hacer que ella equilibre a la que al mismo objeto destinan las localidades.

3. En la práctica, al fijar en cada país la proporción en que el gobierno central y los poderes locales han de contribuir al sostenimiento de las escuelas, deberán tomarse en cuenta las condiciones nacionales, o sea el grado de cultura general, el hábito de contribuir directamente al sostenimiento de la instrucción primaria, la eficacia del gobierno local, el grado de evolución democrática, la homogeneidad de razas y el grado en que las diferencias sectarias y de partido apasionan a los ciudadanos y determinan su actitud frente a los problemas de enseñanza.

4. La cuota del Estado a cada una de las unidades subordinadas de gobierno debe fijarse sobre las siguientes bases: censo escolar, asistencia media, necesidad y esfuerzo.

B. EL CASO DE CHILE.

1. En Chile, conviene implantar el sistema mixto en materia de sostenimiento de escuelas primarias, pero en forma gradual y paulatina.

2. Deberían ser desde luego de cargo de los municipios, sujetándose a las normas generales que el Gobierno dictara, las escuelas de instrucción primaria y de perfeccionamiento para adolescentes y adultos, los campos de juego, las bibliotecas populares, la asistencia a los niños necesitados, las dotaciones de talleres de Economía Doméstica para escuelas de niñas y de Trabajos Manuales para escuelas de hombres. Deberían las comunas contribuir, además, con el terreno para edificios escolares y un 50 por ciento del valor de la construcción de estos últimos.

3. A medida que aumentara la eficacia del gobierno local y se desarrollaran las demás condiciones favorables a la plenitud del régimen mixto, convendría elevar la cuota de las municipalidades y conferir a éstas atribuciones más amplias.

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LA INSTRUCCIÓN PÚBLICA EN EL PARAGUAY.

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ANTECEDENTES Y GENERALIDADES.

La instrucción pública ha existido felizmente en el Paraguay ya desde los tiempos del coloniaje y sólo ha sufrido interrupciones sensibles en las épocas de anormalidad consiguientes al primer período de la Independencia, primero bajo la larga dictadura vitalicia del Dr. Francia y luego a causa de la guerra de 1865-70. Un minucioso y documentado estudio sobre el particular puede verse en el No. 10 adjunto (Anexo A) de la Revista del Instituto Paraguayo, institución a la que el suscrito tiene el honor de representar en este Congreso. Acompaño este estudio de uno de los más reputados investigadores de historia patria en nuestro país por los interesantes datos documentales que contiene y que demuestran el estado relativamente avanzado de la cultura general en el Paraguay, ya en los días del coloniaje, y especialmente en los primeros días de la Independencia, bajo el progresista gobierno de la primera junta y en el de don Carlos Antonio López.

Terminada la guerra que dejó el país en escombros, una de las primeras preocupaciones de los gobiernos subsiguientes fué la de restaurar las instituciones de la instrucción pública que en el Paraguay ha estado siempre sostenida y dirigida por el Estado, salvo en un breve intervalo en que estuvo a cargo de las comunas mientras se reorganizaba la administración pública si bien no por eso hayan dejado de contribuir voluntariamente a impulsarla algunos municipios.

Normalizada la vida nacional, la instrucción pública ha vuelto a recuperar su progresión ascendente y no se omiten esfuerzos por que sus beneficios alcancen a los moradores de los más apartados rincones del territorio nacional, multiplicándose incesantemente para ello el número de las escuelas primarias graduadas y normales, mejorando sus instalaciones y material, reformando convenientemente sus planes de estudios, iniciando la enseñanza profesional y poniendo igualmente los programas de la enseñanza secundaria y superior en armonía con los adelantos alcanzados en tan importantes materias por los países que marchan a la cabeza del movimiento científico contemporáneo en todo aquello que es adaptable a nuestras modalidades y circunstancias propias.

A. INSTRUCCIÓN ELEMENTAL.

La Constitución Nacional dispone en sus declaraciones generales (Cap. I, art. 8) que "la educación primaria será obligatoria y de atención preferente del Gobierno," sin perjuicio, bien entendido, de la "libertad de enseñar y aprender" que consagra el art. 18 al hablar de los derechos y garantías de que gozan todos los habitantes del país (Cap. II). En consonancia con esta disposición de la carta fundamental y con el sistema de enseñanza adoptado tradicionalmente en el país, el Congreso ha dictado leyes especiales, particularmente en los últimos años, para hacer efectiva la asistencia escolar obligatoria con medidas coercitivas para los padres o encargados de los remisos en el cumplimiento de este deber.

El Dr. don Eusebio Ayala, ex-ministro de Instrucción Pública y actual delegado del Gobierno del Paraguay, ha propuesto últimamente un proyecto de ley que se halla en estudio, para completar la organización de las instituciones de la instrucción pública, y en el que se define lo que debe entenderse y tenerse por el minimum de instrucción primaria obligatoria a que se refiere la recordada prescripción constitucional. Esta debe limitarse a las nociones más indispensables para la vida que es posible y se debe proporcionar a todos los habitantes de un país, o al mayor número de los mismos, y que constituyen como el núcleo central, por así decirlo, como la primera célula de los conocimientos, destinada a servir de asiento ya sea a la instrucción secundaria, pro-

fesional o superior, mediante el adecuado desarrollo y cultivo de las nociones elementales, o cuando menos, para las más primordiales necesidades de la existencia social.

La instrucción primaria propiamente dicha no debe tener, según esto, ningún fin especial determinado, sino el de proporcionar al cerebro los primeros rudimentos para deletrear después el libro de las ciencias, de las artes y de las profesiones en sus diferentes ramos y grados.

La instrucción primaria en el Paraguay se halla servida por los siguientes organismos: Escuela normal (mixta) para la formación del magisterio destinado a las escuelas elementales y graduadas; escuelas normales rurales para la formación del magisterio de los grados inferiores de campaña (también mixtas); escuelas graduadas de primera y de segunda clase, de las que funcionan varias en la capital y en los principales pueblos del interior; escuelas elementales de varias categorías según la importancia de las localidades, en la capital y campaña; escuelas rurales superiores e inferiores y escuelas nocturnas para niños (varones exclusivamente) y adultos. En las escuelas graduadas elementales y rurales la enseñanza no es mixta, dándose de mañana a las niñas y de tarde a los varones, generalmente por personal distinto para cada una, y son todas muy concurridas.

Por lo que respecta al plan de estudios de las mismas, decía el mensaje presidencial al Honorable Congreso Legislativo, al inaugurar sus sesiones del año próximo pasado (1914):

Un programa mínimo tiene que existir, conforme a las circunstancias y posibilidades del país, que sea el patrón de la educación común, dijimos hace un año, y, hoy, consecuentes con este pensamiento, hemos de anotar lo siguiente:

El actual plan de estudios de instrucción primaria se encuentra inspirado en el sistema integral de educación, pregonado como satisfactorio por la pedagogía de nuestros días, pero al que le falta fomentar el espíritu de generalización y el hábito de la investigación, que, en el niño se forma sólo con la observación personal metódica y constante.

Desde este punto de vista la más grande aspiración didáctica es sintetizar los conocimientos para reducir su masa y perfeccionar los procedimientos con el fin de acortar el camino. Abarcar de una mirada un campo más o menos vasto de la naturaleza, es un objeto digno de nuestra conquista.

El secreto de la educación no está en recargar la memoria del niño con informaciones inacabables planeadas en extensos programas analíticos que responden gradualmente a otras tantas asignaturas, y que aparecen ante la vista inexperta del niño como un laberinto cuyas conexiones desconoce, aun después de finalizar el ciclo correspondiente de la enseñanza, "sino en excitar una curiosidad amplia y variada, dar al niño el saber seguro y bien fundado, del cual nacerá un día una voluntad firme y decidida."

Reducir, pues, agrupando en sus puntos generales de contacto, los conocimientos que deben servir de fuente a la enseñanza primaria, es hacer un plan generalizador en sus fines.

En este punto, el trabajo de modificación completa del plan de estudios primarios está tocando a su término, y una comisión de profesionales en la materia dictaminará sobre esta compleja cuestión de nuestra organización general de enseñanza.

Nuestra raza quedó desmembrada a consecuencia de la gran tragedia, y necesario es crear los órganos sociales que restauren las energías perdidas de esta generación para que ella engendre ciudadanos capaces de constituir un pueblo sano, fuerte y vigoroso.

Y este pensamiento debe alimentar el fondo de todo programa de reformas pedagógicas y sociales.

La comisión de la referencia (constituida por el Director General de Escuelas don Manuel Riquelme y el Director de la Escuela Normal de la Capital don Juan R. Dahlquist) se expidió a fines del mismo año, y en conformidad a las ideas expuestas por el ministro del ramo prenombrado, el plan de estudios de la enseñanza primaria ha sido objeto de una importante reforma que ha empezado a entrar en vigencia desde el presente año escolar de 1915 y que, según queda dicho, se inspira en las nuevas orientaciones aconsejadas por la pedagogía moderna, en forma de proporcionar una enseñanza más provechosa y más adaptada a la tierna mentalidad de la niñez, haciéndola preferentemente objetiva e intuitiva y suprimiendo el considerable recargo de asig-

naturas con el que solo se consigue abrumar los cerebros infantiles cuando nó inutilizarlos para después.

Este nuevo plan de estudios para las escuelas primarias de la República, cuyo ejemplar se incluye (Anexo B), ha merecido honrosas referencias y ha obtenido el primer lugar en una reciente encuesta sobre métodos de instrucción elemental, organizada por la Dirección General de Escuelas de la provincia de Buenos Aires, según puede verse en la Revista de Educación de La Plata, publicación oficial de aquélla, en el número correspondiente al mes de octubre último.

En el adjunto folleto explicativo se contiene la solución práctica a varias de las cuestiones que sobre instrucción elemental enuncia el programa del Congreso, al menos por lo que al Paraguay respecta.

Como complemento de las instituciones de instrucción primaria en el mismo, pueden mencionarse: las conferencias semanales al magisterio sobre métodos de instrucción; la formación de una biblioteca y museo pedagógico para el estudio de los textos y materiales de enseñanza y obras de consulta sobre la materia; la formación de bibliotecas populares; la implantación de granjas agrícolas anexas a las escuelas rurales; ley de jubilación especial para los maestros de escuelas; becas para estudiantes normales, etc.

La prensa nacional, al unísono y a la par de los poderes públicos, consagra a la educación popular decidida y valiosa cooperación.

El nuevo proyecto de instrucción pública propende a hacer más efectiva la difusión de la instrucción elemental en el sentido de que las instituciones de educación primaria superior (escuelas graduadas) se costeen por los municipios de mayor población e importancia que son los que disponen de mayores facilidades para su sostenimiento. Pero hasta la fecha están todas indistintamente costeadas por el Estado, salvo las de carácter puramente particular.

Es digno de hacer notar que la instrucción primaria, eficazmente fomentada por los próceres de la primera junta gubernativa instituida a raíz de la Independencia y después bajo el gobierno del primer López, estaba tan desarrollada en el Paraguay antes de la guerra (1865-1870) que su población figuraba ventajosamente entre las de más avanzada cultura en el Río de la Plata en esa época, tanto por el número de las escuelas públicas como por el grado de instrucción que en las mismas se daba y por el carácter obligatorio de la enseñanza que había sido implantada en él aun antes que en muchos países europeos. (Véase a este propósito el Anexo A.)

Los problemas educacionales en el Paraguay han vuelto a ocupar un sitio preferente en las preocupaciones del gobierno y del pueblo mismo que se afanan de consuno por la difusión de la enseñanza, como lo prueba el hecho de que casi todos los vecindarios organizan suscripciones voluntarias para la construcción de modernos edificios escolares, adecuados además a las exigencias del clima.

Algunos maestros normales recibidos en el Paraguay, siguen cursos de perfeccionamiento en el exterior. El magisterio, nacional en su totalidad, está llamado a desempeñar una función importante en la labor reconstructiva del país.

La instrucción pública elemental se halla al inmediato cargo de una corporación denominada "Consejo Nacional de Educación" y de una Dirección General de Escuelas. Hay el proyecto de unificar los diversos grados e instituciones de instrucción pública, centralizándolas bajo la dependencia de una sola corporación.

B. INSTRUCCIÓN SECUNDARIA.

La instrucción secundaria ha existido en el país desde fines del siglo 18 y subsistió durante la época de la Independencia con las mismas intermitencias y vicisitudes que han quedado expuestas al hablar de la instrucción primaria. En la época contemporánea, el principal establecimiento de este género empezó a funcionar en la capital de la República creado por ley del 4 de enero de 1877 por el entonces ministro de Instrucción Pública Dr. don Benjamin Aceval, distinguido hombre público que

desempeñó también en Norte América la importante misión de representante diplomático del Paraguay cuando el arbitraje internacional que terminó con el laudo del Presidente Rutherford Hayes, y fué más tarde director de dicho establecimiento de enseñanza.

Este constaba de un curso denominado "preparatorio" para el ingreso al mismo, dada la falta de escuelas graduadas y lo deficiente de la enseñanza primaria en aquella época—curso hoy suprimido por innecesario—y de otros seis de un año de duración cada uno.

"Este instituto, dice el estudio mencionado, es el origen de la ilustración general del pueblo. De él salieron y siguen saliendo casi todos los intelectuales del país."

Al crearse más tarde la Universidad Nacional (1889), por la ley revisada del 18 de octubre de 1892, se crearon también otros colegios de segunda enseñanza en las principales poblaciones de la República, todo bajo la dirección de una corporación denominada "Consejo Secundario y Superior," con su correspondiente rectorado y direcciones.

El plan de enseñanza secundaria, parcialmente retocado en sus detalles, fué objeto de una primera reforma general en 1903, a propuesta de su director, el Dr. Manuel Franco, quien desempeñó más tarde el ministerio de Instrucción Pública. Dicha reforma cuya exposición explicativa también se acompaña (Anexo C) preparaba la tendencia a la bifurcación en los estudios mediante la institución de los dos ciclos en la enseñanza que se propone completar el actual jefe de la instrucción pública, don Belisario Rivarola, para lo cual ha encargado al actual director del establecimiento, Dr. Bruno P. Guggiari, el proponer la reforma complementaria, de acuerdo con las ideas expuestas en los últimos mensajes y memorias sobre la materia y con las nuevas tendencias y orientaciones que empiezan a predominar en esta importante rama de la instrucción pública.

El nuevo plan de estudios que con pocas variantes entrará en vigencia próximamente, es en resumen el que se consigna en el cuadro adjunto (Anexo D).

El sistema de la enseñanza ha sido objeto también de modificaciones recientes propuestas por el mismo director prenombrado, implantándose las pruebas escritas mensuales, cuyos resultados se comunican a los padres del estudiante, y los exámenes escritos de fin de curso, a más de los orales, todo lo cual se ha empezado a implantar desde el presente curso académico.

El pensamiento fundamental de esta innovación es intensificar los conocimientos adquiridos en la primera enseñanza para los que quieran elevar el grado de su nivel intelectual y cultural, en un primer ciclo que puede llamarse complementario de aquella, con nociones generales cuya duración es de cuatro años y encaminar para las carreras superiores en un segundo ciclo que puede llamarse preparatorio o intermedio y cuya duración es de tres años, con su correspondiente bifurcación para los estudios del derecho y ciencias sociales, de la medicina, ciencias naturales o de las matemáticas, o sea, de los estudios universitarios superiores, pues para sus facultades menores bastarían los estudios del primer ciclo.

A los que sólo cursen el primer ciclo se da únicamente certificados de estudios y los diplomas del bachillerato a los que terminen el segundo.

La instrucción secundaria que se da en los colegios nacionales de la República es sufragada igualmente por el Estado, el que además acuerda becas a los estudiantes faltos de recursos en concursos de competencia.

Los alumnos sólo contribuyen con el importe de la matrícula escolar, el derecho de exámenes libres que se conceden con las restricciones reglamentarias convenientes, y un módico derecho de diploma.

Funcionan igualmente varios establecimientos particulares incorporados a los colegios de segunda enseñanza y sometidos a los mismos programas y métodos, como también a su inspección, debiendo además sus alumnos dar sus pruebas de curso ante los profesores de los colegios nacionales.

Los resultados obtenidos de éstos son por lo general bastante halagüeños y es de esperar que mejoren considerablemente con las saludables reformas implantadas y en vías de adopción, tanto en los estudios, como en las pruebas mensuales y anuales y en los métodos mismos de la enseñanza, en todo lo cual se trata de seguir el movimiento progresivo de las instituciones análogas del exterior, en cuanto son aplicables y convenientes al país.

Otra medida digna de mención y que consulta mejor el aprovechamiento del tiempo para profesores y alumnos, es la adopción del horario continuo, durante las horas de la mañana, dejando libre el resto del día para la mejor preparación de unos y otros.

C. INSTRUCCIÓN UNIVERSITARIA.

Vinculada estrechamente al funcionamiento de las instituciones de segunda enseñanza, la universitaria empezó en 1883, bajo el nombre de Escuela de Derecho, con los primeros bachilleres que se recibieron en el país el año anterior. En 1890 se inauguró la Facultad de Derecho y Ciencias Sociales y poco después la de Medicina (1892) y los cursos anexos de Notariado, Farmacia y Obstetricia, habiéndose ya formado y recibido un buen número de inteligentes y aprovechados profesionales en sus diversos ramos. Adjunto sus planes de estudios (Anexo E). Ahora se trata de ensanchar su esfera de acción aumentando sus facultades menores o clases anexas con las de Procuración y Agrimensura.

La Facultad de Derecho y Ciencias Sociales que es la de mayor vida, ha sido objeto últimamente de una importante innovación, consistente en la división en ciclos de su plan de estudios, siendo el primero para la Licenciatura o estudios profesionales (5 años), y el segundo para el Doctorado, o estudios jurídicos de perfeccionamiento (2 años), según consta en el respectivo decreto del 10 de noviembre de 1910 que ha empezado a entrar en vigencia desde el presente curso académico (1915) y cuya copia se incluye (Anexo F).

Esta innovación fué adoptada después de escuchar las opiniones del claustro universitario en una encuesta promovida por el rectorado sobre las reformas de que era susceptible el primitivo plan de estudios de dicha facultad.

La instrucción universitaria también es costeadada por el Estado, en armonía con otro precepto de la Constitución Nacional, la que al referirse a las atribuciones del Congreso (Cap. VIII, art. 72, inciso 14) dispone que a éste corresponde "proveer lo conducente a la prosperidad del país, y sobre todo, emplear todos los medios posibles para el progreso e ilustración general y universitaria." Los estudiantes contribuyen por ahora como los de la enseñanza secundaria (derechos de matrícula, de exámenes si son libres y de diplomas), en una proporción mayor que aquéllos, pero módica. Los exámenes libres sólo se admiten en la facultad de derecho y sus anexas.

Además de la enseñanza proporcionada directamente en la universidad, el erario público costea becas en el exterior, sea para estudios complementarios y de perfeccionamiento o para otras carreras como las de ingeniería, mecánica, agronomía, veterinaria, odontología, etc. El mayor número de las becas acordadas en estos últimos años fueron para seguir estudios en diversos institutos norteamericanos.

D. INSTRUCCIÓN DE LA MUJER.

En las escuelas primarias y graduadas se proporciona la primera enseñanza a los niños de ambos sexos indistinta, pero separadamente. En las escuelas normales reciben instrucción conjunta niñas y varones, y tanto en éstas como en las graduadas, existen cursos de labores manuales y domésticas para las primeras.

En el magisterio predominan actualmente, y las mujeres son admitidas a la par de los varones en los colegios nacionales de segunda enseñanza y en las facultades universitarias. La escuela de Obstetricia es frecuentada exclusivamente por mujeres, lo mismo que el Colegio Mercantil de Niñas, institución particular de índole profesional, como lo indica su nombre, subvencionada por el Estado y fundada y dirigida por la

primera Doctora, la Srita. Serafina Dávalos, recibida en nuestra facultad de derecho, donde cursan también otras alumnas.

Existen además otros colegios particulares para niñas, de segunda enseñanza, frecuentados por gran número de alumnas y sometidos únicamente a la supervigilancia de las autoridades de la instrucción pública.

INSTRUCCIÓN AGRÍCOLA.

La enseñanza de la agricultura, que figura igualmente en el plan de estudios secundarios, se dió con carácter especial en un instituto agronómico que funcionó bajo la dirección del reputado naturalista, Dr. Moisés S. Bertoni, y en el que se recibieron los primeros agrónomos nacionales y se publicó una revista para la divulgación de los conocimientos, observaciones y estudios sobre clima, cultivos y otras materias afines.

País eminentemente agrícola el Paraguay, hoy se está generalizando la enseñanza elemental de las nociones agrícolas desde las escuelas primarias, en forma a despertar la afición a las labores rurales en las que el país cifra en gran parte su porvenir y riqueza.

Anexo al Departamento o Dirección de Fomento, de reciente creación, funciona actualmente una escuela agronómica para formar peritos agrícolas.

El Banco Agrícola por su parte suministra a los agricultores instrucciones adecuadas, y elementos para mejorar los métodos de cultivo a los que conviene dedicarse, con lo cual se ha conseguido elevar notablemente en cantidad y calidad el nivel de la producción nacional.

INSTRUCCIÓN COMERCIAL.

La enseñanza de la contabilidad y del peritaje mercantil ha figurado adscrita a la secundaria y fué iniciada con mayor amplitud por el Instituto Paraguayo en cursos especiales de cuatro años de duración.

Hoy se han organizado estudios más completos consagrados a este ramo y si bien el Estado no los costea ni los dirige por sí mismo, concurre eficazmente a mantener las dos instituciones que los proporcionan y que están autorizadas a expedir diplomas de competencia en dichas profesiones: la Sociedad Empleados de Comercio y el Colegio Mercantil de Niñas ya citado cuyos programas comprenden cuatro años de aprendizaje.

OTRAS INSTITUCIONES.

Existen además otras instituciones complementarias de la instrucción pública, unas sostenidas directamente por el Estado, como parte de los organismos administrativos y otras por la iniciativa particular o con carácter mixto, esto es, con el auxilio de aquél.

Entre las primeras deben mencionarse: la Biblioteca Pública; el Archivo de la Nación, rico especialmente en valiosos documentos de gran valor para la historia del Río de la Plata, en la época colonial y la independencia; el Seminario Conciliar en que se forma el clero nacional; el Museo de Historia Natural y Jardín Botánico y Zoológico, cuyo plantel comprende el parque de unas 450 hectáreas en que estuvo anteriormente la primera escuela de agricultura, en la Trinidad, en las inmediaciones de la capital: y entre las segundas, figuran el Instituto Paraguayo, literaria, histórica y de bellas artes, a la vez que de educación física; la Biblioteca Americana y Museo Godoy; el Gimnasio Paraguayo; la Academia de Bellas Artes; los Centros de Estudiantes; la Asociación Nacional de Maestros, etc. Estas dos últimas y el Instituto Paraguayo publican revistas propias.

EDUCACIÓN FÍSICA.

Para terminar este sucinto informe, debo mencionar la educación física que ha tomado también incremento de 20 años a esta parte. A más de las clases de ejercicios físicos o gimnásticos que son obligatorios hoy día en las escuelas primarias graduadas y secundarias, merecen especial mención el creciente desarrollo que van tomando las asociaciones de *foot-ball*, el Club de Regatas (Rowing Club), los Boy Scouts, de reciente formación, el Club de Gimnasia y Esgrima y otros derivados del impulso inicial que el Instituto Paraguayo imprimió al culto del vigor físico en el Paraguay.

Tal es, a grandes rasgos, el estado de las cuestiones educacionales en nuestro país, en lo que pueden tener más atinencia con los problemas que comprende el programa de esta docta asamblea, de la que tantas y tan proficuas enseñanzas nos prometemos todos, para colocar la instrucción pública en nuestros países en una franca corriente de mutua inteligencia y la mayor unidad posible, ya que ella está llamada a ser una de las más firmes columnas del verdadero panamericanismo.

ANEXOS.

Entre los apéndices que el autor somete se encuentran los siguientes:

Anexo A. Segunda Conferencia dada en el Instituto Paraguayo sobre historia de la enseñanza nacional (anotada por el mismo). Publicada en Revista del Instituto Paraguayo. Asunción, Talleres Nacionales de H. Kraus, Año I, Núm. 10, 1897.

Anexo B. Plan de estudios y programas sintéticos para las escuelas primarias de la República. Ministerio de Justicia e Instrucción Pública, 1915.

Anexo C (1). Enseñanza secundaria; Plan de estudios. Proyecto de reforma presentado por la Dirección del Colegio Nacional de la Capital. Asunción, 1904.

Anexo C (2). Programas de los colegios nacionales según el plan de estudios de 25 de marzo de 1907. Primero al sexto año. Asunción, Talleres Gráficos de Estado, 1913.

ANEXO D.

BACHILLERATO ELEMENTAL.

Asignaturas (clases de 45 minutos).	Primer ciclo.			
	Primer año.	Segundo año.	Tercer año.	Cuarto año.
Castellano (incluso Literatura).....	5	5	5	3
Matemáticas (Aritmética práctica y razonada, álgebra, geometría plana y del espacio, trigonometría y topografía).....	6	6	6	6
Geografía.....	3	2	2	.....
Historia (*y 2° Americana y Nacional; 3° y 4° Universal).....	2	2	2	2
Francés.....	2	2	2	2
Historia natural (botánica, geología, zoología, anatomía, fisiología e higiene).....	2	2	2	2
Física (incluso meteorología).....	2	2	2	2
Química (incluso cristalografía y mineralogía).....	2	2	2	2
Cosmografía.....	.....	.....	.....	2
Moral práctica (lecturas y comentarios).....	1	1	1	.....
Moral cívica, economía política y derecho usual.....	.....	.....	2	2
Filosofía general.....	.....	.....	.....	3
Contabilidad.....	.....	2	2	.....
Agricultura y ganadería (nociones generales).....	.....	.....	.....	2
Dibujo y caligrafía.....	2	2	2	2
Gimnasia (incluso ejercicios militares y tiro al blanco).....	2	2	2	2
Música y canto.....	1	1	1	1
Trabajo manual.....	1	1	1	1
Total.....	31	32	34	34

BACHILLERATO EN FILOSOFÍA Y LETRAS.

Asignaturas (clases de 45 minutos).	Segundo ciclo (A).		
	Primer año.	Segundo año.	Tercer año.
Literatura (española-americana y nacional-extranjera).....	5	5	5
Historia de la Literatura Griega y Latina.....	.....	.....	3
Historia (universal 1 y 2) nacional.....	5	5	5
Filosofía general.....	4	4	4
Francés.....	2	2	2
Latín.....	5	5	5
Rafes griegas.....	.....	3	.....
Alemán o Inglés.....	4	4	4
Taquigrafía.....	3	.....	.....
Dibujo.....	2	2	2
Gimnasia.....	2	2	2
Música y canto.....	1	1	1
Total.....	33	33	33

Anexo D—Continuación.

BACHILLERATO EN CIENCIAS.

Asignaturas (clases de 45 minutos).	Segundo ciclo (B).		
	Primer año.	Segundo año.	Tercer año.
Matemáticas.....	4	4	4
Botánica (general, especial, aplicada).....	3	2	2
Zoología, ídem.....	3	3	3
Física.....	3	3	3
Química (inorgánica, orgánica, analítica).....	3	3	3
Cristalografía, mineralogía y geología.....	3		
Anatomía, fisiología e higiene.....		3	2
Astronomía.....			3
Lógica.....		2	
Historia nacional.....			5
Alemán o inglés.....	4	4	4
Raíces latinas.....	2	2	
Raíces griegas.....		3	
Dibujo.....	2	2	2
Taquigrafía.....	3		
Gimnasia.....	2	2	2
Música y canto.....	1	1	1
Total.....	33	33	33

¹ Nota.—33 lecciones de 45 minutos equivalen a 24 h. y $\frac{1}{2}$ semanales, o sea 4 horas diarias; incluso dibujo, gimnasia y música, etc., más los intervalos de recreo.

ANEXO E.

UNIVERSIDAD NACIONAL—PLANES DE ESTUDIOS.

FACULTAD DE DERECHO Y CIENCIAS SOCIALES.

Licenciatura (Plan de estudios, 3 clases semanales).

Primer curso: Derecho romano (primer curso); derecho penal; economía política; sociología.

Segundo curso: Derecho romano (segundo curso); derecho civil (primer curso); derecho constitucional; economía política.

Tercer curso: Derecho civil (segundo curso); derecho administrativo; derecho comercial (primer curso); finanzas.

Cuarto curso: Derecho civil (tercer curso); derecho comercial (segundo curso); derecho internacional público; derecho procesal (primer curso).

Quinto curso: Derecho civil (cuarto curso); derecho internacional privado; derecho procesal (segundo curso); legislación comparada del trabajo.

Doctorado (Plan de estudios, 2 clases semanales).

Primer curso: Derecho civil comparado; derecho penal comparado; derecho constitucional comparado; historia diplomática.

Segundo curso: Derecho civil comparado; derecho comercial comparado; derecho administrativo comparado; historia económica y financiera del Paraguay y principales naciones de Sud América.

Escuela de Notariado (Plan de estudios).

Primer año: Derecho civil (personas y cosas), 6 horas semanales; derecho comercial (primer curso), 3 horas semanales.

Segundo año: Derecho civil (obligaciones), 3 horas semanales; derecho mercantil (segundo curso), 3 horas semanales; elementos de derecho penal, 6 horas semanales.

Tercer curso: Derecho civil (sucesiones), 6 horas semanales; derecho político, 3 horas semanales; derecho procesal, 6 horas semanales.

Facultad de Medicina (Plan de estudios).

Primer año: Química analítica (inorgánica y orgánica); química médica; física médica; historia natural médica (zoología y botánica).

Segundo año: Anatomía normal—dissección; histología normal.

Tercer año: Anatomía topográfica; fisiología; bacteriología; higiene.

Cuarto año: Patología interna; patología externa; anatomía patológica; terapéutica; medicina operatoria.

Quinto año: Enfermedades nerviosas; clínica médica; clínica quirúrgica; obstetricia.

Sexto año: Clínica médica; clínica quirúrgica; ginecología; oftalmología; dermatología; psiquiatría; medicina legal y toxicología.

*Escuela de Farmacia (Plan de estudios).***PRIMER CURSO.**

	Horas semanales.
Física farmacéutica	3
Química inorgánica y nociones de mineralogía.....	4
Química analítica (primer curso).....	3
Botánica general y aplicada.....	4
Anatomía, fisiología y zoología.....	3
Total.....	17

EJERCICIOS PRÁCTICOS (SEGUNDO CURSO).

Farmacología y nosología.....	6
Química orgánica y nociones de química biológica.....	4
Farmacia galénica.....	4
Química analítica (segundo curso) y nociones de electroquímica	4
Total.....	18

EJERCICIOS PRÁCTICOS (TERCER CURSO).

Toxicología.....	4
Bacteriología, higiene, esterilizaci6n, legislaci6n y moral farmacéutica.....	6
Química analítica (análisis de materias alimenticias, análisis técnicos, diagn6sticos y ensayos de drogas).....	6
Total.....	16

Escuela de Obstetricia (Plan de estudios, 3 horas semanales).

Primer año: Anatomía, fisiología, embriología, embarazo, partos, higiene obstétrica—3.

Segundo año: Distosia, operaciones obstétricas, medicina legal obstétrica, higiene de los recién nacidos, ejercicios de clínica obstétrica.

ANEXO F.

Decreto del Vicepresidente de la República en ejercicio del Poder Ejecutivo sobre la organizaci6n de los estudios en la Facultad de Derecho y Ciencias Sociales. Noviembre 10, 1910. Reglamentaci6n del Consejo Secundario y Superior para la ejecuci6n del decreto anterior.

Decreto del Presidente Provisorio de la República en ejercicio del Poder Ejecutivo aplazando hasta el 1° de marzo de 1914 la vigencia del plan de estudios de la Facultad de Derecho y Ciencias Sociales. Abril 19, 1912.

Decreto del Presidente de la República, poniendo en vigor el plan de estudios citado. Febrero de 1915.

EL PROBLEMA DE LA EDUCACIÓN PRIMARIA EN LA AMÉRICA LATINA.

Por GUILLERMO A. SHERWELL.

Ex-Jefe de la Sección de Educación Primaria y Director General del Ramo, en la Secretaría de Instrucción Pública y Bellas Artes, de la República Mexicana.

Entre los asuntos escabrosos de la tierra los más difíciles son gobernar un pueblo y modelar un alma. Y, sin embargo, todo el mundo habla de política y de pedagogía. Quizás esto haya obligado a muchos espíritus de pensar sereno y de sentir elevado a abstenerse con cierta amargura de hablar de dichas materias; pero como ellas figuran entre las ideas fundamentales de los pueblos, necesario es tratarlas, siquiera sea para poner cada cosa en su lugar mientras llegan tiempos mejores en que sólo se levanten voces autorizadas para hablar de lo más difícil y sólo se presenten espíritus nobles para tratar de lo más sagrado.

Ofendería yo la ilustración de esta alta asamblea deteniéndome en esas sencillas cuestiones pedagógicas propias tan sólo de alumnos de las escuelas normales que apenas empiezan a iniciarse en los asuntos de la educación, y las cuales no tienen la menor novedad para los que en este lugar concurren con la imponente autoridad del saber y de la experiencia. Lo que se propone la pedagogía; lo que debe servir de base a todos los modos de actividad que con la terminología convencional de métodos, sistemas y procedimientos, son propios del texto elemental del arte de la enseñanza, así como los asuntos de la higiene pedagógica y de la psicología infantil, puntos son que sería tan impropio tratar aquí como indebido sería que en un congreso médico se levantara un galeno mediano a disertar largamente sobre elementos de anatomía y fisiología humanas. Maestros somos, y debemos hablar en lenguaje de maestros. Por lo tanto, entro de lleno en el problema que intento estudiar serenamente, y al hacerlo no tengo el propósito pueril de dar una lección al sabio congreso que me otorga su benevolencia, ni quiero extenderme más de lo necesario, ya que la concisión es propia de un pensamiento concentrado y adecuado para disciplinas serias y profundas.

Siguiendo el uso común, he empleado y seguiré empleando la expresión América Latina en esta memoria, pero paréceme mucho menos impropio llamar Ibero-América a la tierra que se extiende al sur del Bravo, ya que entre el antiguo Lacio y el mundo ibero-americano actual hay que pasar por modificaciones que al elemento latino imprimieron las agrupaciones ya existentes en el suelo ibérico antes de que las legiones de Roma pasearan sus águilas por la península, las que determinaron invasiones de godos y de árabes y las que impuso el elemento indígena de América. Y no digo esto a humo de pajas, que si siempre se tomara en cuenta, menos errores de trascendencia cometerían nuestros sociólogos, pedagogos y políticos.

De los países ibero-americanos mis observaciones se limitan a Méjico, mi patria, en donde estudié los problemas escolares desde los bancos del aula hasta la Oficina de la Secretaría de Instrucción Pública y Bellas Artes que tuve a mi cargo en época difícil; pero aunque lo expuesto aquí se refiere especialmente a Méjico, algo habrá quizás que por extensión pueda aplicarse a los demás países de la América Latina, y que conviene se diga en este lugar, en donde nos ponemos en contacto las dos grandes razas que comparten el dominio de este vasto continente.

La América Latina tiene mucha tierra y poca gente, y el nivel general de su cultura aun deja mucho que desear. Debemos exceptuar de esta afirmación las regiones en donde predomina la inmigración europea, y en donde los gobiernos no tropiezan con el obstáculo de una raza fatalista e inerte en quien cuatro siglos de sufrimientos parecen haber matado toda aspiración y toda energía.

La población de Méjico no llega a 15,000,000 de habitantes. De éstos, 2,500,000 son de blancos, 8,000,000 son de mestizos y más de 4,000,000 de indígenas. El doble de esta población cabría holgadamente en uno solo de los Estados, Chihuahua, que, con más de 230,000 kilómetros cuadrados, es siete veces y media más grande que Bélgica, y tiene 14 veces menos la población de esta nación europea.

Si para resolver el problema educativo nacional no se toma en cuenta el elemento étnico, el fracaso es seguro. Las cuestiones educativas, como las cuestiones políticas, no pueden resolverse en abstracto. Los cerebros más ilustrados no pueden evitar incurrir en lo que suele llamarse sofisma racionalista, por el cual se pretende que hay instituciones buenas y malas en sí, cuando unas mismas instituciones, buenas en un lugar, pueden ser pésimas en otro; como el alimento que hace bien a un individuo puede perjudicar a su vecino; como los métodos educativos adecuados a una raza pueden no ser enteramente aplicables a razas diferentes. El mundo no es homogéneo, ni puede serlo. Sería una inmensa desgracia que lo fuera. Cuando todos los hombres fueran iguales se acabaría el progreso de las naciones; cuando todas las naciones fueran idénticas el mundo habría vuelto al caos y la humanidad perecería, no por la lucha ni el exterminio, de donde salen vidas nuevas y mejores, sino por la inercia, la falta de acciones y reacciones, la ausencia de choques, diferenciaciones y contrastes, que no son la característica de la vida, sino que son la vida misma. Es verdad que nada nuevo se dice con esto, pero es bueno recordar tales principios, ya que en ellos está la base de estas consideraciones.

Y a reserva de volver al fin a estas ideas, en las que debemos insistir so pena de edificar en el vacío, voy a enumerar algunas de las características, de las cualidades y de los defectos de nuestra educación, tal como en Méjico existe, insistiendo quizás más en los defectos que en las cualidades, que al fin y al cabo no es mala manera de encaminarse a la salud el conocer claramente la enfermedad.

En Méjico hay una clase social poseedora de exquisita y refinada cultura. Nuestros cerebros, como nuestros cuerpos, se visten en París y en Londres. Tan pronto como los hombres de cualquiera otra parte del mundo, nosotros conocemos lo más nuevo que produce el brillante espíritu francés, el alma meditativa de los alemanes, el espíritu atrevido de los rusos, o el alma ponderada de los ingleses. Italia nos manda los obras de sus criminalistas y psicólogos. Nietzsche ya estaba siendo olvidado por nuestros jóvenes cuando el superhombre constituía una novedad en otros pueblos; y, si ya hemos dado de mano a Comte, renacemos al espiritualismo con Brunetière, a la vez que sonreímos irónicamente con Anatole France. Y en las horas de honda meditación y de sereno estudio volvemos los ojos a nuestros hermanos, y hallamos deleite en Obligado y en Ricardo Palma, clásica lectura en Montalvo, sabiduría en Icazbalceta y en Cuervo, y versos numerosos en Bello y en Acuña, en Gutiérrez Nájera y Otón; o, atravesando los mares, vamos al seno de la Madre, más amada cuando más simbólica, y de los odres nuevos extraemos el añejo vino que nos ofrecen Menéndez Pelayo, Menéndez Pidal, el Padre Mir, Valera el clásico, Núñez de Arce el vibrante, Camipoamor el humorista, Pereda, cantor de la grandeza de las montañas y del mar, y tantos otros, entre los cuales la mujer, esa fantástica mujer que los que no nos conocen ponen tras celosías como favorita de sultán, ha colocado nombres como los de Fernán Caballero y doña Emilia Pardo Bazán.

Desgracia muy grande es que esta cultísima clase social sea tan pequeña. Abajo de ella, a una gran distancia, están la miseria intelectual y moral, el abandono, las energías reprimidas hasta el aniquilamiento, las aspiraciones sofocadas hasta la muerte, la ignorancia casi absoluta, el abandono más completo. Entre ambos grupos hay una clase media intelectual, corta en número y no muy firmemente cimentada en su educación. Crear definitivamente esta clase media, y hacerla grande y sólida hasta que absorba a la clase inferior, levantándola de su estado actual, tal es el problema de la educación en Méjico, y entiendo que muy semejante es en muchos otros países ibero-americanos. Y resolverlo es en gran parte la empresa de la escuela primaria.

Casi todos nuestros estadistas han reconocido la existencia del problema; pero, a juzgar por el estado actual de nuestra sociedad, ninguno ha sido bastante afortunado para resolverlo. Me tomaré el atrevimiento de presentar algunas ideas sobre este punto, con todo el respeto que me merece este ilustre congreso.

La primera equivocación que se ha cometido consiste, en nuestro concepto, en considerar que la divulgación de la enseñanza es un problema pedagógico. Esto no es verdad. Un maestro puede enseñar más o menos bien, y no influir desde luego en la difusión de la cultura popular fuera de la escuela que dirige o del pueblo en que trabaja. Este problema es sociológico y legislativo. Yérrase, por tanto, en estudiar la pedagogía de un país de cultura generalizada para resolver la generalización de la cultura. Lo que debe estudiarse es la organización social y la legislación, sin dejar nunca de referirlas a la organización social y a la legislación propias. Puede muy bien existir un país de cultura media más general y de maestros inferiores a los de otro. Si un país posee los 10 mejores maestros del mundo en las 10 escuelas más hermosas, nunca hará tanto por la cultura de su pueblo como el que, en las mismas condiciones, tenga 100 maestros menos notables en 100 escuelas menos perfectas. Y, al fin y al cabo, un país le puede enseñar a otro en materia pedagógica mucho de edificios y dotaciones, pero poco de espíritu y de vida íntima; y el problema escolar no se resuelve sólo con palacios ni con laboratorios de alto precio.

Es costumbre considerar que todos los problemas pedagógicos giran alrededor del maestro, y a fe que hay mucha razón en esta creencia, de la cual se infiere lógicamente que la obtención de maestros buenos es el punto capital en toda obra de regeneración educativa. Pero antójase me que en esta materia hemos estado desde hace tiempo dando vueltas dentro de un círculo vicioso. Se paga mal a los educadores, dícese, si se tiene en cuenta la alta misión que desempeñan; y dícese también que debido a la corta paga no se pueden conseguir maestros buenos. "Pues si los maestros no son buenos, bien están mal pagados," contesta el sentido común, "puesto que su alta misión pierde mucho en estatura desde que está mal desempeñada, y aun debe considerarse nocivo a la sociedad el hombre que, en lugar de conformar espíritus de acuerdo con los ideales del bien y la belleza, torpe y zafio, les imprime deformidades permanentes." Tratar el problema de esta manera es perder la esperanza de llegar a solución alguna. Culpas de ello es el carácter falsamente sentimental que se ha dado a la profesión docente, y del cual se han derivado tantos errores. Los que hablan mucho de la nobleza de la profesión y de que ella constituye un verdadero apostolado, con todo y decir grandes verdades, han hecho muy serios perjuicios a la enseñanza, pues la naturaleza de los apóstoles modernos, por regla general, exige para sí la mayor suma de consideraciones y ofrece de su parte la menor cantidad de sacrificios. Y no podemos en rigor censurar lo que arraiga en la naturaleza humana.

La sociedad no tiene derecho de exigir sacrificios a los maestros, como no tiene derecho de exigir que nadie se convierta en mártir. Si hay maestros que quieran trabajar como apóstoles, suya será la gloria, y allá les batiremos palmas y les rendiremos homenajes. Apóstoles fueron los nobles franciscanos, los primeros en enseñar a nuestros indios a rezar y a leer, los jesuitas que llevaron sus instituciones docentes hasta nuestras montañas, y todos los religiosos que tanto han procurado difundir la enseñanza del catecismo y del silabario, sin más recompensa que la satisfacción del deber cumplido. Pero como nadie puede garantizar que todos quieran seguir el mismo camino, y lo lógico es que eso no suceda, es mucho mejor dejarse de vanas palabras sobre apostolados colectivos y que se trate este asunto como un verdadero negocio. La sociedad requiere los servicios del maestro y los paga. Si paga barato obtendrá servicio malo; si paga caro tendrá muchos solicitantes y podrá escoger lo mejor. Pero como hay escasez de maestros de escuela, es muy posible que aun pagando caro, la sociedad de nuestro país tenga que contentarse con medianías, por falta absoluta de algo bueno. De aquí el problema de preparar maestros o de importarlos.

Teóricamente las escuelas normales deberían ser instituciones particulares bajo la vigilancia del Estado, como deberían serlo todas las que hacen un negocio de la preparación de hombres para una carrera lucrativa; pero las condiciones actuales hacen indispensable que el Estado sostenga esas instituciones para satisfacer su propia demanda. En Méjico se han enseñado en diversas escuelas normales los principios de la

pedagogía, con un resultado que todavía no es posible calificar. Hay quienes consideran el normalismo en Méjico como la mayor conquista pedagógica moderna, y quienes en él miran un estupendo fracaso. Lo cierto es que en esta institución hay serios defectos que deben corregirse. Es el más importante la superficialidad de la enseñanza que en las escuelas normales se imparte. Ingresan a ellas niños de 15 a 16 años, que desde luego estudian antropología y psicología; y de ésta, desde los bancos del aula, inferien, siguiendo lo que dicen los textos, los principios pedagógicos que formula un profesor de París o que llegan recientemente importados de los Estados Unidos de América. Reciben un pequeño barniz de ciencia, lo indispensable para tener capital doctrinario que impartir a los niños, y luego, con el derecho que les da su diploma, pasan a enseñar y entran dentro de la maquinaria gubernativa como otras tantas ruedas más o menos imperfectas.

Pues bien, éste no es el medio de preparar buenos maestros de escuela, y el Gobierno que tal hace se coloca voluntariamente dentro del referido círculo vicioso: "Preparo malos maestros porque al fin les voy a pagar poco, y pago poco a los maestros porque al fin no son buenos." La única solución que yo concibo es preparar con carácter de urgencia maestros de escuela, siquiera sea poco bien equipados mentalmente, y diseminarlos por todas partes para que lleven los conocimientos más indispensables a los rincones más lejanos del país; y empezar a preparar una nueva generación de maestros con fuertes estudios científicos y con rigurosa disciplina mental, a la que se sometan los candidatos, seguros de que se están preparando para una carrera lucrativa como la del médico o la del ingeniero. A ellos les pagará bien el Gobierno; y si no les pagara, no por eso sufrirían; su preparación sólida les permitiría ganarse la vida enseñando, con tanta facilidad como un médico se la gana curando o un ingeniero construyendo puentes. Pero, fuera de la preparación indispensable a los maestros rurales, no deben existir instituciones de semi-cultura, porque es bien sabido lo peligrosos que son los cerebros que la ciencia desflora, sin disciplinarlos seriamente con la larga vigilia y el intenso meditar.

¿Podrá resolverse la cuestión por medio de la importación de maestros extranjeros? Nó, y mil veces nó. Una mente ilustrada y un corazón bien puesto se rebelan de consuno ante la monstruosa idea. Del extranjero se puede obtener información, pero no educación. Los norte-americanos pueden ir, y es de desearse que vayan, a la América Latina a enseñarnos su maravillosa ciencia de aplicación práctica; y los ibero-americanos podemos venir a esta gran nación a instruir en las más íntimas bellezas del idioma de Quintana, de Zorrilla de San Martín o de Camoens; y así pueden realizarse cambios con otras naciones; pero la educación del pueblo, la formación del alma de las generaciones que nacen, es empresa que requiere al artífice nacional, hombre penetrado de los ideales, nutrido de los pensamientos, inspirado en los amores que constituyen los lazos íntimos de la nacionalidad. Para enseñar el amor de la bandera de los tres colores que nació en Iguala, para hacer que se abran los ojos de la juventud a beber los resplandores del fulgurante sol argentino, para hacer que la niñez bata palmas entusiastas al paso de la gloria que simbolizan las barras y las estrellas, es necesario que el maestro sienta antes las mismas hondas emociones, es necesario que sienta húmedos los ojos y convulso el corazón al paso del águila que devora la serpiente, que lleve dentro del alma el culto de la pampa y de las cumbres andinas, o que sienta brotar de sus labios un hurra involuntario al ver ondear sobre el fondo azul del cielo los colores que simbolizan la poderosa Unión Norteamericana.

De cualquiera que sepa ciencia podrá obtenerse ciencia; pero el amor no se sabe y no se enseña; el amor se siente y se comunica en temblores de voz, en resplandor de ojos, en plegarias y ritos, en corrientes misteriosas que van de una alma a otra alma y esto jamás lo podrá hacer quien no lo sienta muy hondamente, y sólo puede sentirlo así quien en los brazos de la madre, antes de despertar a la razón, fué levantado para ver pasar entre sonantes clarines y legiones fatigadas, aclamada y ondulante, desgarrada y gloriosa, envuelta en velos de humo y resplandores de sol, la patria entera convertida

en un jirón de seda, al que es incienso el vapor de la sangre derramada en los combates por defenderla, por mantenerla íntegra, respetuosa para todos, pero de todos respetada.

Creo en el amor a la humanidad, pero lo considero irradiando de adentro hacia fuera. No puede amarla quien no principió por amar el pueblo en que nació, su patria y su continente. El que no ama a su madre no puede amar a su prójimo; el que no ama a su patria no puede amar a su continente. Creo en América como el escalón intermedio entre la patria y la humanidad. Y creo que desarrollar el amor de América es una grande obra educativa que no será estable si no está firmemente basada en el santo amor de la patria. Al extranjero la mano; a la patria el corazón.

El maestro de escuela primaria debe siempre, sin excepción alguna, ser natural de la patria en que ejerce su ministerio.

Una vez preparado el maestro, se considera en Méjico que existe una obligación recíproca entre el Gobierno y él. El primero debe dar empleo, el segundo debe servir determinado número de años. Una política liberal, seguida por los gobiernos, ha dejado sin cumplimiento la segunda parte de este compromiso, permitiendo que los maestros vayan a trabajar adonde mejor les plazca. Como, dada la corta cantidad de escuelas, no ha habido en el Distrito Federal de Méjico escasez de maestros, no ha sido necesario exigir los servicios de todos los normalistas. Pero la primera parte del compromiso sí se ha llevado a efecto, de tal modo que cada año se presenta el problema de dar colocación a los que se gradúan en las escuelas normales que el Gobierno Federal sostiene. El problema se complica más aún, con la repugnancia que a muchos inspira el trabajar en las escuelas rurales del distrito, como si no fuera más honroso enseñar a quien más lo necesita. Creo que debe establecerse un sistema por el cual el título de una escuela no tenga más valor que el que le corresponde como credencial de aptitud; y que el gobierno debe quedar en libertad de emplear o no emplear a los titulados, y de someter a los solicitantes de empleos a pruebas distintas del título, que garanticen una completa aptitud. Lo contrario haría que las escuelas normales se adueñaran de la maquinaria administrativa de las escuelas primarias y, dados notorios vicios de organización que aquí sería largo enumerar, eso sería fatal, ya que toda garantía es poca para obtener el mejor servicio en las instituciones fundamentales.

Se ha dado el caso, y digo esto por vía de ilustración de ciertos peligros que deben evitarse, de que en las escuelas normales se hayan formado núcleos con propósitos ajenos a los puramente docentes, y que hayan extendido sus ramificaciones a los normalistas en ejercicio activo. La escuela primaria debe quedar inmune a toda influencia que la aparte de su noble objeto, y el organismo que la gobierne debe estar preparado a purificarla, dándole lo mejor y extirpando de ella cuanto la manche o perjudique.

También es defectuoso nuestro sistema en lo relativo a la concesión de ascensos. Predomina de una manera lastimosa el respeto a la antigüedad con preferencia a todo. Pondré por ejemplo la sorpresa de un viejo maestro, que protestó en cierta ocasión porque no se le hubiera ascendido a director de una escuela cuando era el más antiguo en el empleo inmediatamente inferior a ése, y que no pudo comprender cómo sus deficiencias intelectuales no sólo fueron obstáculo para su ascenso sino que le valieron una seria amonestación para que mejorara su saber, so pena de remoción en caso de no hacerlo.

Dos defectos más hay que agregar a éste, entre los más notables. Es el primero el que condensaríamos propiamente en la palabra *política*, y el segundo el que cristalizaríamos en la palabra *amistad*.

Noble es la política alta, constructora; la que ve a lo lejos y trabaja para un porvenir mejor; la que hace abstracción de unos cuantos individuos o de un partido para atender a los intereses de toda la comunidad; pero es poco estimable la que consiste en luchar por el triunfo de unas pocas personas y por la división de los empleos públicos entre partidarios más o menos ineptos, que convierten dichos empleos en sinecuras y dejan que la nación ruede a un abismo. El Gobierno se cree con derecho a utilizar a los

maestros en servicio del poder, y muchos de éstos se muestran ansiosos por manifestar adhesiones productoras de ascensos, que no pueden adquirir por aptitudes técnicas, de las cuales carecen o que no son estimadas debidamente. La amistad con los que mandan es también una gran productora de empleos y de promociones, y no es necesario expresar los resultados fatales de este sistema.

No veo mejor solución para estos males que una legislación aplicada honradamente, por la cual se creen organismos que se moderen mutuamente y que mutuamente se eviten la comisión de arbitrariedades en la concesión de los empleos; y por la cual se obligue a los maestros ya empleados a mantenerse a cierto nivel de eficacia para conservar sus puestos, y a demostrar ciertas excelencias para obtener los ascensos.

De este modo ni la antigüedad sola, ni la política, ni la amistad en ningún caso, serán factores que influyan en la organización de las escuelas y la excelencia del personal educativo.

Pero hay otros elementos que tomar en consideración, además de los maestros. El más importante de ellos es la aplicación de una buena ley de enseñanza obligatoria, el cual está íntimamente ligado con el del número de las escuelas existentes.

No discutiremos, por ser ello innecesario, la necesidad de que la enseñanza primaria se haga estricta e inflexiblemente obligatoria. Así se ha comprendido teóricamente en Méjico, y nuestras leyes han dictado las medidas necesarias, que jamás se han puesto en práctica, parte por desidia y parte por carencia de escuelas, con el resultado deplorable de que en Méjico exista un analfabetismo aterrador, y de que la obra de fusión de nuestras razas dentro de un mismo ideal nacional esté todavía por empezar.

Hay dos elementos distintos que concurren en la realización de este atraso—además de los ya citados y de otros que debemos citar—y de los cuales no se suele hacer mención, como no sea para alabarlos, cuando en realidad son dignos de condenación. Es el primero la desconfianza del Gobierno hacia las instituciones particulares de enseñanza. Témease que en éstas se enseñe algo contra sistemas ideales o formas de gobierno que ni siquiera están todavía bien determinadas en la conciencia nacional, si aceptamos que fuera de las clases cultas exista en Méjico una conciencia nacional. Es el segundo la falta de ingerencia del poder central con respecto a asuntos educativos en los gobiernos municipales, cosa de elogiarse en países adelantados como los Estados Unidos, en donde todos aprecian el valor de la enseñanza, pero digna de censura en todo país en vías de formación, en donde se necesita que un poder vigoroso y único haga sentir su influencia y su unidad de criterio en esta labor de edificación en la que no debe permitirse que las intrigas, o las escaseces, o los espíritus de localismo municipales vengan a poner tropiezos a una obra eminentemente nacional.

Conseguir la patriótica cooperación, o aun imponérsela por la ley, de dueños de fábricas, talleres, haciendas, minas, sociedades mercantiles, religiosas, científicas, literarias, y de todos los organismos que de alguna manera puedan ayudar en esta labor, y establecer un sistema de vigilancia para impedir con energía que la educación se desvíe de los altos fines nacionales, es el primer paso para conseguir la difusión de la enseñanza. El segundo es centralizarla en un organismo vigoroso y enérgico, ajeno a la política de los partidos, que unifique, imprima dirección y dé fuerza propulsora poderosa; que ya no hay tiempo que perder, y es necesario cuanto antes forzar, obligar a la nación entera, a ser culta, a despertar a la vida plena de los pueblos que saben lo que son y lo que quieren.

La falta de escuelas ha sido obstáculo poderoso para la difusión de la enseñanza. Hacíase en Méjico lo que en las exposiciones internacionales. Míranse en éstas productos maravillosos de los que, por singular desgracia, no hay más existencia en el país que los remite. Dos o tres escuelas primarias situadas en barrios aristocráticos servían de bello exponente de nuestros adelantos pedagógicos; pero fuera de ellas sólo había edificios inadecuados y no en número bastante. Era conmovedor el espectáculo de los niños pobres que en los arrabales miserables acudían a las nuevas

escuelas abiertas en el corto tiempo que tuve la felicidad de poner un poco de mi vida y el alma entera en aquella labor tan hermosa.

Niños y niñas de los suburbios famosos en los anales del crimen venían en multitudes algo inquietas a la escolita limpia que los llamaba. Los jardines de niños, cuyo número se duplicó en aquella época, obraron transformaciones maravillosas en los hijos de la miseria, del vicio y del dolor, que al mes de estar en el jardín ya estaban limpios, ya tenían sonrisas y cantos en los labios, ya iban confiados y carifosos a la *señorita*, la educadora, con sus piecitos aun débiles, a contarle balbuceantes las estupendas historias ingenuas de los cerebros pueriles, mientras las madres, las pobres indias y mestizas, antes desconfiadas, pasaban por la ventana y sonreían contentas al ver el grupo dichoso en que empezaba una nueva vida que ellas jamás pudieron imaginar.

Hacer que esta levadura crezca hasta llenar los ámbitos de la nación, es la obra noble y la responsabilidad inmensa que se presenta ante el pueblo mejicano. No es hoy el tiempo de construir palacios. La escuela blanca y limpia, el cuarto con asientos y ventanas, o la choza humilde abierta al aire de los trópicos, serán las escuelas en donde se formará la patria del futuro. Pero que se multipliquen; que no haya un solo niño que se exima de la obligación de concurrir; que no haya un solo pueblo en donde no tenga reservado cada niño su lugar dentro del recinto de la escuela.

He estudiado someramente una parte pequeña del problema de la educación en nuestro pueblo. Después de la escuela primaria vienen las instituciones superiores de enseñanza, cuya esfera de acción es más restringida y cuyo estudio merece realizarse, pero no cabe dentro de los límites que me he trazado. Y fuera de todas las escuelas está el mayor elemento educativo: el medio social donde los niños viven, y que necesita mejorarse en todos sentidos, con lo cual el problema escolar se relaciona con todos los problemas sociales y gubernativos, y exige la colaboración de todos los departamentos de la administración pública.

Vamos a terminar volviendo a las primeras ideas que hemos expuesto. Los pueblos deben ayudarse mutuamente por conveniencia propia. Entre las naciones la más alta moral es respetar a las otras; y el más alto derecho es gozar del respeto de ellas. La homogeneidad entre las naciones es irrealizable, y sería una torpeza intentarla, porque si se consiguiera mataría todo progreso. Sin heterogeneidad no puede haber cooperación y, por consiguiente, no puede haber amistad internacional. Cada nación debe vivir para sus propios fines y cultivar sus propios ideales dentro del vasto concepto de la unidad humana, mucho más amplio que el de la unidad de patria, el de la unidad de raza, o el de la unidad de un continente. Lo que una nación no debe a la humanidad, no puede deberlo a ninguna otra nación.

Debemos reconocer como fundamento de los sistemas educativos las tendencias étnicas. La pedagogía que se desarrolla en una tierra puede no ser aplicable a otra. Los ibero-americanos somos de raza no bien comprendida por los extraños. Tenemos la herencia céltica, la romana, la semítica, que nos ha dado el meditar hondo, la inspección interna, la religión con sus pomposas características orientales; y la indígena, que nos ha dotado de cualidades misteriosas aun no bien comprendidas; atavismos recónditos que dicen a nuestros oídos, con voces apagadas, cosas de los incas y de los toltecas, cuya sangre aun circula en esos oscuros habitantes de nuestras aldeas, que esperan el despertar de sus energías para cooperar con ellas al bienestar y a la grandeza de nuestras patrias, y al bienestar y a la dicha de la humanidad.

Estudiémonos, comprendámonos, hagamos desde luego la obra de urgencia, y preparemos una labor cada día más perfecta por el conocimiento de nuestras propias condiciones. Aprendamos las lenguas extranjeras para comunicarnos con los otros pueblos en nuestros negocios, y para decirles frases sinceras de amistad leal; pero conservemos nuestros propios ideales, y no hablemos de la patria a nuestros hijos sino con la dulce lengua en que dijimos a nuestras madres la primera palabra de amor y en que elevamos al cielo la primera oración de nuestras almas infantiles.

VALUE OF THE KINDERGARTEN IN THE PUBLIC-SCHOOL SYSTEM.

By MISS LUCY WHEELOCK,

Head of Wheelock Kindergarten Training School, Boston, Mass.

The kindergarten is a necessary and important part of every public-school system. To support this assertion I wish to present three considerations:

First. The first stage of education is most important. Plato, long before the time of Froebel, asserted the importance of the first state when he wrote "Beginnings are most important, especially when a thing is young and tender." The modern Freudian school of psychology is giving added emphasis to this contention in its tracing of many of the characteristics and nervous conditions of later life to the unconscious period of childhood. Froebel took his analogy of growth from the plant world; the young seedling needs the most tender care and nurture in order that the hardy plant may be realized. For human beings the child garden supplies the true atmosphere of growth. The beginning conditions the excellence of later stages of school education. If any one part of the education of the human being can be more important than any other, it is the first which conditions all the others. In theory we all assent to this principle. In practice it has not yet been realized in planning our schools. If we really believe this, the best buildings and the best teachers with the best training would be given to the little children. I have visions of a happy day when a kindergarten building with its court and fountain and gardens shall be considered as important in a municipal system as a modern and well-equipped high school building.

Second. If we concede that the first stage of education is important, the problem of the best type of education for that period becomes pressing. I claim that the kindergarten furnishes the best type for the period from 3 to 6 because of its aims, methods, and results.

The kindergarten furnishes the type of education most consonant with the needs of childhood. It is the result of years of careful study and deliberation on the part of its founder and also of years of practice by carefully trained, earnest, and devoted exponents. Froebel was the first systematic student of child life. He learned his lesson from mothers and from playing children. His motto "Come, let us live with our children" indicates the attitude of the kindergarten toward child life. It has been said that the great glory of Froebel is that he founded a school without books. He based his methods on his knowledge of childhood and his discovery that play is the child's world. He was the first to utilize the activity of the child which expresses itself through play as a means of education. The educational value and significance of play needs to-day no demonstration. Our playgrounds and the universal recognition of the moral and educational significance of play are proof of our belief in its value. If any one needs conversion I refer him to the latest document in this matter, Mr. Joseph Lee's valuable book "Play in Education." Mr. Lee writes from his own experience as a devoted father, living with his own children, and as the father of the playground movement in America. In studying the needs of childhood, Froebel discovered play to be the natural expression of a child's life and he made his valuable contribution to the direction of the activities of the children by devising a concrete system of play materials and an organized series of games and plays. The Froebelian materials form the most valuable yet discovered, because they have stood the test of 50 years' use with increasing approbation, and because they follow and guide the instincts of little children. The chief of these is curiosity—the child's desire to know—which finds satisfaction through material adapted for experiment and investigation. The instinct for making or construction is satisfied by the simple building blocks and other materials for arrangement and self-expression. The garden plan of the kindergarten, which calls for space for garden beds, and a community garden, appeals to the child's instinct for nurture.

Froebel believed with Wordsworth, that the child's "whole vocation is endless imitation." He says that what man tries to represent he begins to understand. Therefore, Froebel devises plays which represent in miniature the world of nature and the world of man. Through play little children initiate themselves into the realities of the life about them.

The kindergarten period is the time for forming habits and attitudes toward life, It is essentially the time for training. Whether the child shall be cheerful or gloomy, morbid or optimistic, helpful or selfish, industrious or idle, attentive or listless, efficient or incompetent, depends largely on attitudes and habits formed in the period from three to six. In his "Great Society," Mr. Graham Wallas shows the effect of "balked dispositions" in individuals, or in national life. The balked disposition means morbid, perverted conditions. This may come very early in a child's development if right activities, right atmosphere, and right materials are not supplied for self-expression. Songs and stories and plays are used together with the play materials to make up the curriculum of the kindergarten for the day. The song and story appeal to the imagination, that faculty most prominent in childhood and most important throughout life. They help to make ideals, to develop the right emotions and right desires and make the beginnings of good character.

The last consideration which I desire to present to you is that the testimony of those who know most of any system is the most valuable, therefore, I summon as a cloud of witnesses to the value of the kindergarten training the 11,000 kindergarteners who are working with the zeal of devoted exponents of a cause in the kindergartens of the United States, the 140 branches of the International Kindergarten Union, representing the whole country, and the uncounted number of fathers and mothers who will testify to the value the kindergarten has been in their homes and to their children. A superintendent of a certain city once said that if the vote for the kindergarten were dependent on a jury composed of fathers and mothers, its maintenance would be assured. The kindergarten interests in this country have been preserved by this large body of supporters who believe in the results seen in their own homes.

The slogan of the Commissioner of Education I give to you in closing. "A kindergarten for every child and every child in a kindergarten."

Adjournment.

SESSION OF SUBSECTION 10 OF SECTION IV.

PAN AMERICAN UNION,
Monday morning, January 3, 1916.

Chairman, ALBERT A. SNOWDEN.

Session was called to order at 10 o'clock by the chairman.

Papers presented:

The teaching of special subjects in the collegiate course of study for business, domestic and foreign:

Languages, by Glen Levin Swiggett.

Geography, by J. Paul Goode.

History, by Wm. R. Shepherd.

Government, by Jesse S. Reeves.

Mathematics, by Everett W. Lord.

Banking and finance, by Charles Lee Raper.

Business law, by Ward W. Pierson.

Business ethics and psychology, by James E. Lough.

Organization and administration, by Arthur E. Swanson.

Statistics, by E. Dana Durand.

Accounting, by John B. Geijsbeek and Donald F. Grass.

THE TEACHING OF MODERN LANGUAGES.

By GLEN LEVIN SWIGGETT,

Bureau of Education, Washington, D. C.

The teaching of modern languages is perhaps the most unsatisfactory of all subjects in the course of commercial education. This is due to a lack of texts prepared with this kind of instruction in view and to the prevailing method of classroom instruction in these subjects. Foreign-language study in the schools and colleges of the United States has been largely for the purpose of discipline in the earlier school years and of culture in the later. This attitude persists in the face of the well-recognized and insistent demand on the part of business men and high Government officials that the modern commercial languages be so taught that students engaging in foreign service, consular and commercial, be given the ability to speak one or more of these languages.

It is difficult to give this ability to students in our schools and colleges as constituted and controlled. Faculty direction of courses of study, the attitude of the teachers of modern languages, and the method of class assignment of students are strong factors still within the school that act in opposition to the growing demand for a more satisfactory and practical plan and method of teaching modern languages. The latter can only be achieved through a larger spirit of cooperation within the

faculty, the growth of an interdepartmental esprit de corps, prompted by a larger sense of public service, by emphasis upon a speaking knowledge of the language in the appointment of teachers, and through a larger freedom within the departments of modern languages that will permit either the dropping of students from these courses, after it is plainly shown that they have neither interest nor ability to pursue a course carried on by the conversational method, or their reassignment to special courses carried on by the traditional method.

The number of texts that place value upon the practical teaching of modern languages is steadily increasing. Teachers' courses in these languages are placing an increasing emphasis upon the ability to speak as a necessary requirement in the study of a modern language. Methods have greatly improved. There is still lacking, however, suitable texts prepared to give through content the essential knowledge of foreign countries and prepared by a method that is both interesting and progressive through a period of study of several years. This lack of suitable texts, together with the inability on the part of the teacher to condition a student's opportunity to pursue a modern language by the latter's native ability to take it, are a serious menace and present insurmountable obstacles for the present, except in a few favored institutions, in the teaching of modern languages for commercial purposes.

The study of Latin should precede, if possible, that of the modern languages. To do this the two elementary years of Latin should be placed in the grammar-school period. Sound pedagogy and precedent argue for this. The study of modern languages in the high school and in the college, on the basis of election and guidance, can then proceed naturally and effectively and the real aim and purpose in the study of all living languages be achieved, namely, the ability to speak them.

THE TEACHING OF GEOGRAPHY.

By J. PAUL GOODE,

Professor of Geography, University of Chicago.

Of all the subjects in the school curriculum, geography has, next to language, the largest possibilities for service in the way of a liberal education for business. The phase of geography which is being developed in this service takes its point of view from both physiography and economics, and attempts to find the physical or geographic influences underlying industry and commerce. It is a fascinating field for both teacher and student. Though its principles may be firmly rooted in the nature of things, its data are in continual flux with the everyday changes in market conditions and international relations. For these reasons it is not an easy subject to prepare in or to teach. But the reward of such a study is found in the exhilaration of a constantly widening horizon, and of migration out of a provincial frame of mind.

The subject as thus conceived lends itself very readily to a year's profitable work as a general course in the later years of high school, or to trade schools and first-year college work. The interest thus aroused and taste acquired lead naturally to the more specialized course in industry and commerce now being developed in colleges and schools of commerce. A brief synopsis of the ground covered here follows:

I. THE GEOGRAPHIC INFLUENCES UNDERLYING INDUSTRY.

Position on the earth, as determining climate, area and form of the lands under study.

Land relief, barriers of mountain or dissected land. Passes and valley routes through highland barriers. Plains and their influence.

Mineral resources: Character, areal distribution, accessibility.

Climate as an influence on life.

Plant life, wild and cultivated, as a basis of commerce.

Human life and development, especially as to stage of development, education and training, population density, government participation in industry and commerce.

II. THE CHIEF COMMODITIES OF COMMERCE—A GENERAL VIEW.

Products of the farm, orchard, and range; the cereals, sugar, fruits, vegetables, beverages, drugs, animal products.

Products of hunting and fishing; furs and fish.

Products of the forest; lumber, rubber and other gums, cork, dyes, etc.

Products of mines, quarries, and wells; the mineral fuels, iron and other common metals, the precious metals and stones, building stones, cement, clay products, etc.

Power as a commodity.

III. THE GEOGRAPHIC INFLUENCES IN COMMERCE.

Advantage of position of the country or region with reference to trade

Winds and currents and the great ocean routes.

The organization of ocean commerce.

The development of land routes of trade.

The development of market foci.

IV. COMMERCIAL COUNTRIES AND THEIR COMMERCE.

Selected countries studied as to commercial development and possibilities.

The growth of world trade and the part played by leading lands.

Sections III and IV as outlined above may be developed as advanced collegiate work, and even a single country may profitably occupy the time of a college course. The work thus developed opens up almost numberless avenues of special research of university grade. In high-school work a textbook is used, almost of necessity. But even here much reading may profitably be done on library references, especially in periodical literature and in the recent official publications by various Governments.

No subject offers a better opportunity for education by way of the eye, since photographs, stereographs, and lantern slides, and, better still, motion pictures, bring vividly before the student the foreign lands and strange peoples at work on the production of commodities, or the transportation of these wares along the highways of world trade. Fortunate, too, are those schools in the great commercial centers, where access is easy to commercial museums; or better still, where the great industries may be visited, and the actual work be observed in the handling and transforming of the raw products into the finished wares of commerce. Then, too, the subject calls for a large and constant use of maps. The ingenuity of teacher and student will also be well repaid by the conversion of statistics into graphs, which bring vividly before the eye the trend of commerce and the growth of nations.

THE TEACHING OF HISTORY.

By WILLIAM R. SHEPHERD,

Professor of History, Columbia University.

Too often is history conceived and written, taught and studied, with the idea that it is an adjunct of belles-lettres and mathematics. But the new concept of history as a record of the totality of human endeavor, as the story of the growth of mankind broadly considered, is giving to the knowledge of the past an organic vigor,

a live practical utility, a genuine power of application to the problems of to-day, which differ more commonly in degree than they do in kind from those of yesterday.

In habitual conversation the world over, men and women have talked and continue to talk about business, politics, and the weather, domestic relations, children, and servants, to the utter exclusion of what is ordinarily supposed to constitute material for history. These men and women were and are living creatures, not animated books; their habitat was and is the bright and busy earth at large and not the dark and motionless shelving of a library. What they have done and thought are the things in general that interested them then, interest them now, and will continue to interest them until the end of time. Such things are the veritable stuff out of which history as a living record of human conduct is made.

History, as the word goes and as the child finds it, is only too apt to be dull, and hence profitless for the youthful if not also for the adult mind. Yet it can be made interesting, and hence valuable, simply by humanizing it.

What people to-day really care to know about their predecessors on this planet is what the latter did in the ordinary affairs of life; just how, in fact, they lived and moved and had their being. Obviously, then, studies aimed at affording a practical familiarity with the methods of gaining a livelihood in the realm of business should include the story of what our ancestors have accomplished in the same realm, pointing out the respects in which they failed and in which they succeeded, and why. The manifold relationships in the actual dealings of people with one another, in their application of the treasures of earth to human welfare, these are the themes on which emphasis should be laid. How our forbears procured the wherewithal to eat and wear and shelter themselves, how such things were produced, exchanged, and consumed; how our parents through the ages contrived to fashion themselves into an ordered society, and how they cooperated to render this world a better place in which to dwell, are questions rising in the youthful mind which call for an adequate answer.

Politics and war, the topics that hitherto have crammed the pages of "history," and commonly made them as dead as the personages of whom they treated, should be relegated to the few who have the leisure and the inclination to learn about them. What the teacher in the modern school of commerce has to present is social history, in the broad acceptance of the term. This will embrace a record of doings in the fields of industry, trade, and transportation not only, but in those of the evolution of groups and classes in the community, their characteristics and relationships, their thoughts, and their deeds, as affecting the development of mankind, quite apart from the spectacular achievements of the soldier and the lawgiver.

The scarcity of available textbooks on organic history of the sort need not daunt the teacher who realizes the value of it. If he will search through the conventional works he will find many a chapter, many a paragraph, and even a sentence to serve his purpose; for even the mere narrator of wars and politics could not avoid altogether the less spectacular or extraordinary, and hence the more human, and the more interesting, in his record. Diligently to seek them out, and to set them forth, means the study of a genuine history that "teaches," and does "repeat itself."

THE COLLEGE TEACHING OF GOVERNMENT IN PREPARATION FOR FOREIGN COMMERCE.

By JESSE S. REEVES,

Professor of Political Science, University of Michigan, Ann Arbor, Mich.

In approaching the subject upon which I have been asked to prepare a paper, I am mindful of the limitations due to the fact that I can not claim any familiarity with

the educational conditions in the institutions of higher learning in the Latin-American countries. I understand that the usual preparation for affairs, in so far as such a preparation is derived in universities, is usually to be found in the law schools of the Latin-American universities. No curriculum, so far as I am informed, generally exists in the Latin-American universities which at all corresponds to our college or the literary department of our various American universities. The broad course of training which the Latin-American universities generally offer in law has frequently been characterized as of very great value for public affairs and also for business in the larger sense. What I shall have to say has to do only with American conditions.

Another confession must be made, and that is that one can hardly claim that training in government is of the same prime importance in the range of higher commercial education as is the training in other departments lying just outside the proper field of commerce and commercial methods. It has, for instance, no such claim as have the modern languages, especially Spanish, French, and German. It is perhaps a part of our general provincialism that our attention is too little directed toward early training in the modern languages. It is comparatively rare when a graduate of one of our colleges is able to make use of any language except his own with anything like confidence and efficiency. The problem of adequate training in the modern languages still confronts us; and its solution will not be reached, it seems likely, until the proper place is given for training in modern languages long prior to entrance into the college. Not infrequently does it happen that a young man who has discovered himself, and desires to enter into a serious training for public affairs or for business, realizes that he has insufficient elementary preparation in modern languages; and it is rare, when such is the case, that the languages are taken up and learned so as to be of real assistance. The languages when so begun remain always foreign, a thing alien, and their spirit untouched.

One must call attention also, but perhaps to a less extent, to deficiencies in expression in English. Notwithstanding the enormous periods of time put into training in writing, both in the secondary school and the first two years of college, the fact remains that the average student in the higher classes of our universities is still unable to express himself concisely and properly in his own tongue. Another shortcoming is the deficiency of our college students in a knowledge of geography. I do not here refer to the more advanced fields in this subject, which we associate with so-called commercial geography, but to the more elementary branches. Here again it would seem that what ought to be received in early training can not be supplied by later study, however diligent that may be.

In calling attention to the deficiencies in the languages and in geography, I have in mind of course not only the foundation for an adequate knowledge of government, but also for a general training in education for commerce. But as one approaches the special field of government these limitations become still more apparent. They make for provincialism, and provincial our young men come to college, and, I am afraid, provincial they leave it.

Calling upon the secondary school, therefore, for initial preparation in the languages and rhetoric and in geography, we proceed to the preparation which the college course should give to the work in government. The two great prerequisites for an adequate undergraduate training in government would seem to be history and economics. In most American institutions having an elective system history is permitted as a freshman elective, and not infrequently economics is also open to first-year students. Assuming, therefore, that students of government are to begin work in the second or sophomore year, it is usually possible to arrange that they have at least one year of history and of economics before entering upon such work.

The past decade has seen great extension in the number of courses offered in political science or government, and a tendency as a natural result toward a certain amount of standardization of such work. The institution is to-day rarely found which, if it

be of any size or standing, has not a distinct department of government or political science. At the present time nearly 200 institutions of higher learning in the United States regard political science as of sufficient importance to provide for a separate department of instruction in that field. Of these, more than 20 announce courses amounting in the aggregate to over 700 hours per year. About 150, including most of the colleges as distinguished from the universities, announce from 200 to 700 hours per year, the smaller colleges, making up the rest of the 200, giving usually less than 200 hours per year in this field. Where no separate department of instruction has been organized, courses in government are frequently offered in the department of history or of economics. A committee of seven, appointed by the American Political Science Association, has investigated the conditions and circumstances of instruction in government in the colleges and universities of the United States; and its judgment, as recently reported, is that while the various institutions show an awakened interest in the field of political science, yet "far too few of our higher institutions have recognized the high responsibility of training either for citizenship or for the public service."

In the general standardization of courses in government it is noticeable that almost universally there is offered an elementary course in American government of three hours per week, running throughout the academic year; and that following upon such course students are led into more advanced courses of a number of different groups. First, those that are descriptive and historical, which, starting from the study of American government in the elementary course, proceed to an examination of narrow spheres of American government, the government of the states, local government, municipal government, colonial administration, American diplomacy, and party government. In the same class may be mentioned the study of comparative government, which, however, is usually restricted to an examination of the English and continental European systems. The second group comprises the more theoretical courses, such as a comparative study of political institutions, or that of political theories and philosophy. The third group is more legal in nature. It comprises American constitutional law, commercial law, jurisprudence, Roman law, and international law. In the fourth group there appears a wide range of subjects determined largely by the peculiar situation of the particular institution. Generally, however, these special courses have to do with specific problems of American government, Federal, State, or local, centering about the problems of legislation, administration, and of the courts.

So large a scheme of courses permits of what might be considered as an undue specialization on the part of the undergraduate. Few American institutions as yet draw any hard and fast lines between undergraduate and graduate instruction in the field. The general course in American government, the door through which all students in political science are expected to pass, is usually open to undergraduates only. Here and there certain courses are restricted to graduates. But by far the greater number of courses offered are open both to graduates and undergraduates. That such a system entails enormous limitations of method is obvious. The interests of the undergraduates are apt to be divided among other courses, and to a still greater extent among the outside interests of the campus and of the university. Again, the undergraduate is apt not to be sufficiently trained in the use of foreign languages as to give him facility in handling the literature of government except through translation. The result of it all is that we continue the provincial character of our training. We start with a lack of familiarity with the foreign languages and geography. We stress the detailed course in American government and make it a prerequisite to all advanced courses. We throw open most of our so-called advanced courses to the undergraduate as well as to the graduate. The result is that the student is apt to come out with an horizon but little, if any, broader than that with which he began.

The committee of seven justly remarks that "of the small percentage of those who strive to gain some knowledge of governmental affairs, only a very minor portion ever go far enough to get any knowledge of foreign governments. Hence the present system is designed to foster an inordinate provincialism which has been one of the banes of our national life. If the citizen-to-be has an opportunity to take but one year's work in government, it is still a very pertinent question whether this one course ought not to be partly comparative government, or whether the study of American government ought not to be broadened by constant comparisons with the European political systems."

If this statement correctly describes the effects of our system of training in government upon those who do not expect to go into a line of work which is distinctly international in its bearings, how much more significant is it as applied to those who desire to acquire an international point of view with reference to international affairs, whether public or commercial! That the American student should be grounded in the theory and actual workings of American government is obvious. But he should also be familiar with the workings of government in other countries, and here again we see the narrowness of our courses in political science which are devoted to the study of comparative government. Again, to quote the report of the committee of seven, "There does not seem to be any good and sufficient reason why the constitutions of Switzerland, Germany, and Norway should be comprised in this field and the constitutions of Canada and Australia omitted. Nor does it appear altogether reasonable that political affairs in Spain and Portugal should be urged as a necessary part of the knowledge of comparative institutions and that the Governments of Brazil, Argentina, and Chile should continue beyond the ken of the mental horizon of the specialist in politics."

Until very recently the available college textbooks in comparative government ignored the political institutions of the countries to the south of us. An indication, however, that we are beginning to realize our deficiencies in this respect is to be seen in the recent college text by Profs. Macy and Gannaway, entitled "Comparative Free Government." It is a satisfaction to note that the authors of this well-considered book have included chapters, albeit too brief, on the political institutions of Latin-America. What has been said seems thus to lead irresistibly in this direction: what we need is that our young men should have, first of all, familiarity with the foreign languages; second, that they should realize the geographical considerations upon which commercial and social intercourse are based; and third, that they should have a familiarity with the political institutions not only of this country and Europe, but also of Latin-America. A few of our universities have introduced special courses in Latin-American history. To these might properly be added consideration of the political institutions of these countries.

So much for the study of government in its narrower sense; but there are other fields allied to it which deserve special consideration. Every one going into international commerce ought to have at his command at least the rudiments of a legal education. Frequently such training is given in the courses of commercial law. The tendency, however, is rather to base these courses upon English common law and not to give consideration to the larger legal conceptions which are common to all civilized peoples. The ideas of legal capacity, status, contract, tort, and delict, of the elementary conceptions with reference to partnership, corporations, not only in English law, but under the civil law, these should all be worked out into a larger scheme of commercial law for the student of international commerce.

From this field one is led at once into that of private international law, or of conflict of laws. It would seem that a course covering the elementary principles of private international law, not as derived from English and American cases, but as a comparative study of the various legal systems, would be of great advantage to the man going into international commerce.

And finally, and perhaps not the least important, is training in public international law. The student of international commerce should acquire an international mind; and no study so develops this as a familiarity with the principles of international law. Not infrequently do I find a student astonished to discover what contributions have been made in the field of international law by those not of the Anglo-American race; and few things tend to arouse the interest of the undergraduate student and make him realize the narrowness of his own training more than to come in contact with the well reasoned and admirably stated contributions in the field of international law made by distinguished jurists of Latin-America, such as Calvo, Drago, and Alvarez. The pursuit of the study of public international law permits as do few other subjects the acquisition of at least a part of that great fund of common legal ideas and ideals which perhaps more than anything else tend to break down narrow provincialism and to make for wider interests and sympathies.

So far it would seem little has been offered in the advocacy of purely vocational training in the field of government for the purposes of commercial life. Little is perhaps to be offered. Training in government has not the same kind of value that training in double-entry bookkeeping or stenography may have. It does not offer the same fund of information immediately available as does training in the principles of international trade and finance. It does, however, tend, it is believed, to lift a student into a frame of mind toward the specific problems of commercial education that can but be of value. Looked at from one point of view the training is purely cultural. But, after all, it may well be that those things which at first sight appear to be cultural only are in the long run of the highest vocational value.

THE TEACHING OF MATHEMATICS.

By EVERETT W. LORD,

Dean of the College of Business Administration of Boston University.

Between the colleges and the business world there has been a gulf which sometimes has seemed impassable. Not a few eminent men of affairs have maintained that the college course tended rather to unfit a young man for business than to aid his advancement. At the same time, the average college professor has considered the world of commerce wholly apart from his sphere and has disdained any connection with business men other than that sometimes necessary when the latter were allowed to contribute toward an educational endowment. In spite of this feeling, an increasingly large number of college men in the past few years have gone into business. These men have insisted that the colleges should recognize the importance of business as a profession, and that business men should acknowledge the possibility of learning something from college courses. One after another, leading educational institutions have offered courses in business or have even established departments of business administration or commerce.

The teaching of mathematics has formed but a small part of these business courses. There seemed to be no particular connection between higher mathematics, trigonometry, calculus, or even higher algebra, and the routine commercial transactions of buying and selling. A study of the catalogues of the various schools of commerce and business administration shows that few of them have included college mathematics in their course. As a rule, these colleges have limited their teaching to higher accountancy, to statistics, and phases of mathematics included in marketing and economic courses. The study of banking and foreign exchange has involved some mathematics, although little more than phases of commercial arithmetic, and the study of insurance has brought in a specialized type of mathematical work—the theory of probabilities and actuarial mathematics.

The school with which I am most intimately familiar, the College of Business Administration of Boston University, includes in its complete course, leading to the degree in business administration, not only the mathematics of accounting, but applications of algebra and geometry, a study of logarithms, and, in one of its divisions, the same work in solid geometry and trigonometry that is required of freshmen in a course in liberal arts. The applications of algebra and geometry are found to be of direct help to the young business man, while the training in solid geometry and trigonometry is warranted as a stimulant to scientific observation and accurate record—two things of the utmost importance to the business man.

When making up the course of this college some 3 years ago, the writer conferred with many business men, including bankers and merchants in various lines, asking them for their opinion on the subjects to be required of the college student who aspired to excel in business. In no case did one of these business men suggest the higher mathematics; indeed, several of them were inclined to believe that any mathematical study beyond that needed for work in accounting was little more than a superfluity. College men, when consulted about the same matter, varied in their opinions largely according to their individual tastes for or against mathematics. In spite of the unanimity of opposition or of indifference shown by active business men to the teaching of mathematics, we have found that the modicum of mathematical training included in our course gives good results. We shall not extend the requirements to include any other of the traditional college mathematics, but we shall continue to allow our students to elect higher mathematical subjects as part of their general course, and we shall encourage such elections when students show marked mathematical ability.

BANKING AND FINANCE IN THE COLLEGIATE COURSE OF STUDY.

By CHARLES LEE RAPER,

Dean of the Graduate School, University of North Carolina.

REASONS FOR SUCH A COURSE OF STUDY.

Few words are necessary to convince us of the need of teaching banking and finance. Such a course should be given in the technical schools and also in the colleges and universities, which place the emphasis of instruction upon the more cultural aspects. The fact that in many countries the great majority of trades are made on the basis of credit, that much of the productive work rests upon credit, that the system of American business is built upon credit, as is evidenced by the fact that in 1910, 86 per cent of the retail and wholesale business of the United States was done with checks and other credit instruments—these facts are sufficient to convince us of the vital importance of banking and finance. We carry on our business in large part through the aid of the capital of others; we borrow their credit to tide over crises, to hold our goods for higher prices, to enlarge our plants, and to open up new fields of production. Individuals, corporations, and governments all make large use of banking and credit.

The people of the United States have appreciated their reliance upon banking and finance—in part upon the credit which the Europeans have loaned them. They are now beginning to understand how vital European credit has been to the Latin-American countries; the war in Europe has in part deprived them of their customary source of capital. We must now join hands with the people of Latin America, to enable them to finance their business more effectively, and to enable us to enlarge our industry and trade.

The use of credit demands the most intimate knowledge of people and their commodities, as well as of their business and political conditions. The credit system of a people in a large measure tests their intelligence, character, and ideals. The credit transaction is never safe unless it rests upon complete confidence in the one who asks for its use, in the business in which it is used, and in the Government which provides its laws of issuance, indorsement, and payment. The credit system tests also the liberality of one man or one community or one nation toward another.

CONTENTS OF SUCH A COURSE OF STUDY.

To make a course on banking and finance vital, the important steps and instruments in the process of banking practice, as well as the chief factors in commerce and industry, must receive consideration. The course should give one a trained knowledge and point of view.

(a) *The bank as a credit institution.*—It is through the bank that the majority of credit transactions are made; it is through this institution that most of our private finance is administered, and some of our public finance. The function of the bank is to manage the chief work of credit—of financing enterprise. It is the bank which gathers some of the savings of the community and organizes them into bank capital and surplus. Upon this foundation, the bank goes forth to ask for the keeping of the management of the loanable funds of the community, to gather them into the largest possible deposits. The chief purpose of the accumulation of deposits is to lend them to the active producers, and when loans are made to them deposits accrue. Not only does the bank lend its own capital and surplus and a large percentage of its deposits, but it may also lend its own credit, as is evidenced when the bank accepts bills of exchange. The bank may also, upon the strength of its specific or general resources, issue bank notes, which it lends to finance the business of the community and with which it adds to the general medium of exchange.

(b) *Loans and reserves.*—The granting of a loan is by no means a simple proposition. A number of important items must be considered before making the loan, as, for example, the length of time, the security, and the business in which the funds are to be invested. Since the bank is in large part lending the funds which belong to its depositors, it must be reasonably certain that the loans will be paid when they come to be due; and it is expedient, if not indeed necessary, for the bank to be able to convert some of its loans into cash whenever the occasion may demand it. The question of the convertibility is, therefore, an important one. It is the cash reserve which enables the bank to meet the demand of its depositors or note holders. Just how large this reserve shall be is one of the great problems of bank practice. The economic and political conditions of the community, as well as the point of view of the bank, must enter into the determination of what course to pursue.

Not only is it necessary for each bank to consider carefully the question of its reserves, but it is also necessary for the most effective banking to have a part of these reserves concentrated in certain strategic places so that in time of need they may be used at the place where the need is most urgent. The reserves of the banks in the United States until the institution of the Federal Reserve System have been so scattered that we have possessed no great reserve fund which could be used in times of emergency; our system of reserves has been such that an undue amount of funds has remained idle in the banks' vaults or has been tied up in New York or the other central reserve cities when the banks have had most urgent need for them. The new system brings some improvement; some of the reserves of its member banks will be kept on deposit with the Federal Reserve bank and can be used when needed.

(c) *Types of banks.*—Not only is it necessary to give the students a clear grasp of the bank as a credit institution and of its loans and reserves, but it is also necessary that they should understand the different types of banks. The various types of banks play different parts in banking and finance. Of the different types, it is not necessary

here to speak with detail; in the course of study they should be sharply differentiated. For the purposes of this paper, banks may be divided into two types: (1) the centralized bank, (2) the decentralized bank. The relative advantages and disadvantages of each type are to be considered. The centralized bank more effectively handles the reserves. It can act as a banker's bank, in which most of the reserves of the other banks can ordinarily be kept. It acts as the effective and economical manager of the movement of gold from place to place, national or international. It can more readily issue bank notes as business calls for them, and with these buy commercial paper, thereby regulating the general discount rate. In times of emergency, it gives strength and optimism to the whole banking and finance system. The decentralized bank lacks practically all of these strong points; the chief advantage which can be claimed for it is that it readily responds to local needs. As an institution for local finance, it is very effective in times of credit stability; but in times of emergency it can not call upon the powerful aid of a great central bank, and it or its community thereby suffers.

(d) *Relation of Government to banking and business.*—The student must understand that the relation of the Government to banking and finance is a vital one. Just how far the Government should regulate the reserves, loans, discounts, acceptances, and bank notes is a large problem. To preserve safety and stability in all the banking operations, and to allow a quick and elastic action on the part of the bank managers, is the ideal. The banks make their profits through lending their funds or credit. Their loans are made to people engaged in agricultural, industrial, and commercial pursuits. The capacity of the borrowers to make good their credit transactions is dependent upon their own integrity, the conditions which prevail in the fields of business, and upon the political ideals and conditions—that is, upon the efficiency of the Government in its protection of business conditions, the freedom of business from governmental regulation, and upon taxation and the use of public funds for the protective or developmental services which the Government renders.

(e) *Conversion of bank assets into cash.*—Since the bank desires to make maximum profits while protecting its depositors and note holders and accommodating its customers with loans, the question of the conversion of its assets into cash is most important. As a rule, the bank which does a general business should be able to convert many of its assets into cash in the shortest possible time and with a minimum of disturbance to business and credit. The system which we have had in the United States has in the main lacked this easy conversion of assets; we have never had a general discount market for bank assets. They have been largely in the shape of local promissory notes, not standardized by acceptance by well-known banks. This fact has caused us to be almost completely lacking in a method of ready discount for bank assets. Bank paper should be as saleable as possible, and it has so been in those countries which have a centralized bank. The European countries, with central banks, have based their financial system largely upon the discount of commercial paper. The financial system of the United States, on the other hand, is based largely on stock exchange securities. In Europe, bank assets are quickly convertible into cash; and whatever loss there may be in such liquidation falls upon the whole community or discount market—that is, upon the commodities in the process of making or consumption; if the assets are not in the shape of discounts, they are in the form of call loans that are largely secured by discounts. In the United States, the fiscal system rests largely upon call loans which are secured by stock exchange securities or upon promissory notes that are unsaleable. Liquidation of our bank assets, therefore, places the heavy burden upon the holders of bonds and stocks, who represent only a part of the community.

One of the purposes of our newly organized Federal Reserve System is to make some change in the convertibility of bank assets. The Federal Reserve banks are required to rediscount for their member banks certain types of promissory notes or discounts.

They may also, as well as the member banks, discount trade acceptances, provided they are based upon the exportation or importation of goods—not domestic trades.

(f) *Three fields for the use of credit.*—The student should clearly grasp the question of the convertibility of bank assets. He should also have a clear understanding of the various fields in which credit may be invested. Any course on banking and finance should give a view of at least three fields for the use of credit: (1) local, (2) national, (3) international. For the most part the banks in the United States have until the present placed practically all their loans in the form of local credit. The banks which have done this have rarely had any other than the local point of view of trade and financial conditions and opportunities. Some of our banks have placed some of their credit on a national scope, but this has been the exception. These banks have had a nation-wide interest in business and finance. A few of our banks have placed slight loans in foreign countries and have advanced their credit to finance the trade between the nations, but for the most part they have done this work indirectly through the great European banks. Until very recently few of our banks have been large enough to play much part in financing international trade; and, too, the national banking act has not permitted the national banks to deal in acceptances of time drafts, thereby making it impossible for them to play an important part in financing foreign trade or in creating a nation-wide discount market. Now that we have the Federal Reserve System, a good many believe that our banks will be able to place more emphasis upon national and international finance. The smallness of our Federal Reserve bank is, however, a handicap to our effort to play a leading rôle in international finance and credit.

(g) *Instruments of banking credit.*—The instruments of banking credit should receive from the student important consideration. The check, the bank draft, the documentary bill of exchange, the commercial bill, the finance bill, etc., should be clearly differentiated and the work of each should be well known. Each one is the evidence of obligations in credit transactions, and each has its own work to perform in financing business. The check plays an important part as restricted currency. So likewise are bank drafts practically everywhere in this country recognized as cash. Checks and ordinary bank drafts are payable on demand and are, therefore, not instruments of discount. Bills of exchange, commercial bills, finance bills, etc., do not serve as currency; they are of the nature of promissory notes, not generally payable on demand. They may be bought and sold through the process of discount, and they may constitute a large part of the assets of the bank, as has long been the case with many of the leading banks of Europe.

(h) *Money market and rate.*—While the study of banking and finance does not deal with money as the standard of value, it is vitally connected with money as a medium of exchange and as a foundation of credit. It is in the banks that much of the money is accumulated; the banks hold a large percentage of the money of a country, and they act as its distributors to the various parts of the world. In most countries a central bank practically controls the money market and rate. In the United States the money market is controlled by the Federal Treasury and by many thousands of disconnected banks. In Europe the money rate of a country tends to uniformity; in the United States it lacks uniformity. The money market, as any other market, is the resultant of the forces of demand and supply, and on this market there are seasonal fluctuations. In Europe the central banks for the most part are able to meet these seasonal demands by a larger or a smaller supply of money in the shape of bank notes. In the United States we have had a surplus at one time and a deficit at another. When we have had a surplus on the money market we have usually had large dealings on the stock exchange, and when we have needed more money or credit an additional supply has not been available or it has come through the expensive liquidation of stock-exchange transactions.

The money market and money rate are also influenced by governmental activity—by public finance. The Government through its power of taxation makes annually a

large call upon the money market, but this call ordinarily has little influence in those countries where public revenues are kept on deposit in the central banks. In the United States public taxes have large influence upon the money market, since most of the National Government's funds do not go quickly back into the channels of business. The Government when it borrows, either for the ordinary public purposes or for carrying on war, exercises an influence on the money market. This influence may at times be very great, as is evidenced now on a large scale as the result of the European war. Ordinarily banking for private enterprise is the chief regulator of the money market and rate; now it is the Government as a borrower for the purposes of war.

(i) *Course in banking and finance rests on general economics.*—Any course on banking and finance must consider the forces and principles of business—the making of raw materials and their finished products, as well as their trade. The reasons why one section is engaged in one industry and another section in another industry, why goods move in commerce from place to place—these reasons must be understood by the student before he can have a vital grasp of banking and finance. It is therefore necessary that the course of study be broad enough to include all of the fundamental principles of economic life.

METHODS OF STUDY.

The reasons why banking and finance should be included in a college course have been given. The contents of such a course have also been given, in some detail. It is now necessary to say a word about the method of teaching such a course. I think it can be taken for granted that it is best to use textbooks as the general guide for the students and the teacher. The texts should, however, occupy only a part of the time; they should be supplemented by extensive readings in general economics. They should also be supplemented by readings in the field of government—on the tariff and other methods of taxation, and on the policy of developing the conditions of business at home and abroad. A careful reading should be made of the daily newspapers, for the facts of the money market and rate, discount rates, rates on bank acceptances and stock exchange loans, domestic and foreign exchange rates, the movement of gold, the market prices of commodities, etc. The students should also see the facts as contained in the weekly bank statements, such as are issued by the New York Clearing House and the Federal Reserve Board. By a combination of texts, parallel readings, daily newspapers, weekly bank statements, and his own enthusiastic interest, the teacher may bring to the minds of the student the leading principles of banking and finance and the more important facts of the operation of these principles in everyday business life. The task is a large one, but it will pay a large percentage on the investment.

THE TEACHING OF BUSINESS LAW IN THE COLLEGIATE COURSE OF STUDY FOR BUSINESS IN THE UNITED STATES.

By WARD W. PIERSON,

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Business law is a comparatively new subject in the college curriculum. Until about 20 years ago a course bearing this title was so rarely taught that it was viewed almost as a curiosity of doubtful parentage. Indeed, the teacher who had the courage to announce such a course often was regarded either as too progressive, or as an incapable, searching for some excuse for his existence. Here and there, however, were men with such rare foresight as to see the trend toward commercial education in our universities. They established courses under such titles as business practice, business procedure, and the like. The courses thus established 20 or 30 years ago have formed the

nucleus around which has been built courses in Business Law as taught to-day in many institutions of higher learning.

Within the period just mentioned—say the last 20 years—approximately 40 per cent of the colleges and universities in the United States have announced courses under the titles business law and commercial law. Some have done so willingly, others have added this course only after repeated urgings by alumni, and the eager insistence of students who have demanded that college should properly equip them for every-day life.

Since the dawn of history nearly everybody has gone into some form of business. There have been few who, because of wealth, indolence, or inclination, have given a lifetime to ease, to art, or to travel. This tendency to go into business is a characteristic of the human race which our colleges have never scorned; they have only failed to take notice of a fact that is now regarded as self-evident. The college has always given the student Latin to develop his foresight; German and French to stimulate his desire for travel; mathematics to improve his sobriety; English to make him bearable—even entertaining; and psychology to increase the subtlety of his wit. Professional schools have long been provided for those entering the professions of law, medicine, dentistry, and pharmacy. It was only yesterday that the colleges suddenly woke up to the necessity of equipping their graduates with implements suited to a business career.

The business world no longer wants apprentice boys. It demands college-bred men. It requires men who shall be well equipped when they enter upon their business careers with the fundamental principles of business practice. Its executives demand that they shall be relieved from training business apprentices. Executives refuse to endure the wasteful process of leaving each individual to learn from costly experience what others have had to discover over and over again. They insist that every applicant for positions above the grade of clerk shall be well versed in business procedure and in the rules governing business conduct. They recognize the fact that a college course made up of the subjects which will train men for business is of first importance.

It is small wonder, therefore, that the movement to include commercial courses in the college curriculum has swept over American colleges and universities in a great wave. Nor is there any wonder, under these circumstances, that the number of students taking such courses should be very large. It is the steady pressure of "The big business machine" that has forced our colleges to offer various courses calculated to meet the needs of future executives. Prominent among the courses that have come into being, as a result of this pressure, are the courses in business law.

There are many critics who still contend that the proper place to study law is the law school. There are many earnest friends who frankly admit that the title, business law, circumscribes no special branch of learning. No one would contend that its scope is limited like that of algebra, or even Latin. Everyone admits that like physics and economics, business law provides a convenient cover for a multitude of sins, and at the same time displays an illimitable variety of virtues.

It is not possible under the title, business law, to group any distinctive body of law. As the very title suggests, it includes all those rules which govern the conduct of men in their business dealings with each other. Every transaction of life, whether it be the taking of the marriage vow, the calling for a doctor or undertaker, the purchase of a bill of goods, or a railway ticket, the drawing of a bank check, or subscribing a name to a deed to real property—all alike arise from or result in the establishment of a legal relationship. Such transactions as these and an infinite variety of other transactions, all fall within the scope of business law. No course in business law offered in any institution can undertake to discover to students all the rules of business conduct. The vast variety of business occupations which result in almost unlimited ramifications of the rules governing these occupations make it impossible to do so. No course

that can be offered in business law in any institution can make of any man his own lawyer. Indeed, no lawyer will accept himself as his own client. But such a course may well be of sufficient breadth to enable a man engaged in business occupations to avoid the pitfalls which continually beset him in his every-day life and to enable him to escape useless and expensive litigation.

Everyone knows that the fundamental law which governs our business relationships is the law of contracts. It makes no difference how the relationship be brought about, whether it be by the direct contact of the parties, or through the medium of agency, partnership, corporations, sales, carriers, or insurance, the relationship has its basis in one form or another in a contract. Consequently, a large number of institutions that are keeping pace with the commercial progress of this century have engaged in teaching the fundamental principles of contracts under the title business law or the title commercial law.

Rapid growth, wide expansion, and accelerating interest have been the chief characteristics in the progress of the teaching of business law in American colleges. Unheard of until a few years ago, to-day this subject holds an important position in most of our progressive colleges and universities. In some instances it forms a fundamental part of an established commercial department; in most technical institutions it occupies an important place on the general roster; while the colleges of arts and sciences are beginning to recognize it as a subject closely allied with the business interests of everyone.

Coupled with the rapid increase in the number of colleges offering business law courses there has been a decided tendency to widen the plan of instruction. From a more or less narrow textbook method the plan of instruction has evolved to a combination of textbook, quiz class, case work, and lectures by practicing attorneys. In this way the collegiate world has met the needs and demands of the business world for a sound training in the rudiments of law.

The truth of the above assertion is well evidenced by a recent investigation in the form of a questionnaire just completed by the business law department of the Wharton School of Finance and Commerce of the University of Pennsylvania. As a result of the investigation educators can not help but see that business law has become an integral part in the higher education offered by American colleges. Letters were sent out to the presidents of all of the leading universities and colleges in the United States to ascertain where business law was being taught, the extent of the course, the number of students taking the course, and the character of instruction offered. Replies from 257 of these institutions have been received.

The following is the distribution of educational institutions reporting:

Universities.....	86
Colleges.....	149
Technical schools.....	14
Agricultural schools.....	8
Total.....	257

EXTENT OF COURSE.

Of the 257 institutions reporting, 98 offer courses in business law. Taking these numbers as a basis of computation, we find that over 38 per cent, or a little more than one out of every three institutions of higher education in the United States offers business law as a regular study.

Of the 86 universities reporting, 20 have a separate commercial course of which business law is an integral part. Twenty others offer it as a subject under their general curriculum, while 46 universities as yet offer no instruction whatsoever in this subject.

Of the 149 colleges reporting, 12 have a distinct commercial course including business law. Thirty-one offer it under the general curriculum. The remaining 106 do not offer business law in any form. Another significant discovery is the growth of business law in women's colleges. Fourteen colleges for women reported. Of these, Elmira and Bryn Mawr offer business law. Elmira College, the first woman's college in the United States in time of establishment, was also the first to offer a separate secretarial course. The growth of the department has been phenomenal. The number of students in business law now comprises 15 per cent of the total number, while the secretarial course contains 31 per cent of the entire student body. Two others of the 14, Florida State College for Women and the Connecticut College for Women, are arranging courses in business law for next year. Here is voiced beyond doubt the trend of women's education toward preparation for independent livelihood, a type of training which is bound to grow in years to come.

Business law forms an important study in technical and agricultural schools. Men who become contractors, or go in to work where they continually sell their services, must always be on guard. Those who have had a good course in business law find in the principles there learned a constant protection from loss. Reports from 14 engineering schools show that 13 offer courses in agency and contracts, and these courses are required for a degree. Out of 8 agricultural schools reporting, 3 require it before graduation.

A development also in point is the teaching of commercial law in State as well as privately endowed institutions. Three of the 17 State institutions reporting give business law as a required subject; six others offer it as an elective.

INTERNAL RELATION OF BUSINESS LAW COURSES TO THE INSTITUTION.

As to the time given over to the teaching of business law it was found that only two institutions offer courses covering four full years, these being the University of Pennsylvania, and New York University. Four others, Bucknell, Columbia, Duquesne, and Temple offer three one-year courses. Ten more offer two-year courses. Twenty-five institutions have a one-year course, while 44 offer business law in the form of a short course of one term or less.

The query "What percentage does the number of students in business law bear to the total enrollment in collegiate department?" brought the following information.

- 1 to 5 per cent of students in 17 institutions.
- 5 to 10 per cent of students in 13 institutions.
- 10 to 25 per cent of students in 25 institutions.
- 25 to 50 per cent of students in 8 institutions.
- 50 to 100 per cent of students in 4 institutions.

Under a consideration of the internal relation of business-law courses to the institution may be included the subject matter of the courses. The subjects studied are practically the same in all institutions, where the course is offered. In engineering schools, the subjects of contracts and agency are emphasized. In the universities, the course is broader in scope and the study more detailed. The subjects covered include contracts, negotiable instruments, agency, partnerships, corporations, bailments, sales, personal property, crimes, decedent's estates, bankruptcy, suretyship, guaranty, and evidence. Several institutions offer also a course in railway law. Where only a one-year course is offered many of these subjects are omitted, but in nearly every instance contracts finds an important place. All the above courses are given both in the University of Pennsylvania and New York University. These universities stand out as leaders both in number of students and completeness of courses offered.

As to whether the courses are required or elective 98 reports were received. Fifty-two require the subject while 46 carry it as a free elective. It is worthy of note that

19 institutions offering a course in business training do not require the subject of business law, but present it as an elective.

As to method of teaching many different answers were given. The interrogation was, "What method of teaching is pursued; i. e., lecture, quiz, casebook, or combination?" The combination method which includes court decisions, class discussion, and the lecture system seems to be most in use. Out of 98 reporting on the question, 37 used the combination method. Seventeen used lectures and quizzes, 5 used simply a textbook supplemented by lectures, while 4 reported courses given through the medium of lectures alone. The remaining number offer combinations of various forms too detailed and too numerous to mention.

Forty-three institutions reported that the subject was taught by practicing attorneys. Three reported that though not practitioners the instructors were graduates of law schools. In 52 schools it is given by instructors who hold merely a college degree. There is, of course, an obvious advantage in having practicing attorneys in charge of the subject, at least to lecture to the students. They are able to present not only the legal status of problems which are continually arising but they are able to bring before the student a wealth of interesting detail and to bring the student into close professional contact with the world as it is, and not as it ought to be. Moreover, the word of a practicing attorney carries with it greater authority than that of one who has never experienced the stubbornness of a legal battle. Legal education of the teacher should be regarded as of the highest importance. Without this perspective is wanting, much that is unimportant is made prominent, and much that requires careful consideration is wholly lost from view. But the practicing attorney, best of all, is able to find the meat in the cocoanut and place it before the student in a manner likely to be most inviting.

INCREASE OF INSTRUCTION IN BUSINESS LAW.

Less than 50 years ago legal education in any form for a regular college student was an unheard-of thing. In college he was given a training in mathematics, language, and science without a thought of training him in the minor legal principles such as a business or technically trained man needs for protection against mistakes in contracting or entering into a business deal of any kind. New Hampshire College reported as having taught business law for the greatest number of years. The subject was introduced there in 1871. It has had a regular place in their curriculum for the 44 years since that time.

There has been a remarkable rapidity of growth of business-law courses in colleges and universities during the last 30 years. The number of institutions where business law is taught has increased in the last 20 years seven fold and in the last 10 years it has doubled.

As a result of the questionnaire, it was found that out of 257 institutions reporting 159 institutions offered no courses in the subject; but of these 16 are contemplating the introduction of such a course within the next two years. Against this number there are but eight which at one time taught the subject but have since dropped it. This would seem to indicate that there will be no cessation in the growth of the teaching of the subject.

The investigation proves beyond doubt the growing importance of business law as a college subject. It is practical for a person in any walk of life. A knowledge of the legal status of corporations, the forms and functions of negotiable instruments, and the laws in regard to property, fill a need in the life of thousands of people engaged in business, commercial, and professional pursuits. We long since have heard "Ignorance of the law excuses no one." A study and consideration of the growth of commercial law in American colleges and universities bears witness to a recognition of the truth and importance of this adage.

It is in the Wharton School, a department of the University of Pennsylvania, that the teaching of business law has probably reached its highest development. At that institution, there are four courses offered in business law. Instruction in this subject started in the Wharton School in 1904 with less than 25 students. At the present time, out of a total enrollment of 2,410 students, 1,943 are taking some one of the four courses offered. The teaching staff includes 16 professors, instructors, and lecturers. Of these, 14 are regular practicing attorneys. It is planned next year to extend the work into five courses as follows:

Business law I (3 hours per week).—Contracts.

Business law II (3 hours per week).—Agency, partnerships, corporations.

Business law III (3 hours per week).—Sales of personal property and bailments, surety and guaranty, decedents' estates, crimes, evidence.

Business law IV (2 hours per week).—Negotiable instruments, bankruptcy.

Business law V (2 hours per week).—Railway law.

The method of instruction is the so-called lecture-quiz-case-book system. For example the students in any course are assembled in lecture for one hour per week. At each one of these lectures there is distributed to each student a mimeographed abstract of the material intended to be covered by that particular lecture. The class is then divided into quiz sections, consisting of about 30 students each, for one or two hours per week, as the case may be, for the purpose of oral quizzing. This oral quiz work is supplemented by a written examination at the close of each month. During the quiz-class hours the lecture is discussed, the assigned cases examined, allotted readings explained, and a series of hypothetical questions answered. Approximately 3,000 hypothetical questions are provided for each subject. No special text is placed in the hands of the students, but a large amount of case book and reference work is required. Anson on Contracts, Lawson on Contracts, Sullivan's Business Law, and Callender's Business Law Case Book are used for the assigned readings. All students are required during the course of the first year to attend the trial of a civil case and to make a complete written report covering the same.

What the direct effect of teaching of business law may be upon the future of students who go directly into business life it is impossible to state with any degree of certainty. A census of graduates of the evening department of the Wharton School taken in 1913 throws some light on this matter. At present there are 762 students attending the evening department. More than 25 per cent of the college work taken by these students is business law. In each year one of the courses required is a business law course. The other courses are confined to financial subjects. All of the students in the evening department are employed during the day time. Substantially all of them were employed at the time of enrollment in some business institution. The census above referred to covered only graduates from 1907 to 1913. The following table taken from one of the evening school publications contains the results of that census:

Year of graduation.	Average salary on enrollment.	Average salary 1913.
1907.....	\$1,040—1904	\$3,120
1908.....	856—1905	3,347
1909.....	1,003—1906	2,700
1910.....	1,044—1907	1,889
1911.....	940—1908	1,690
1912.....	807—1909	1,411
1913.....	753—1910	1,480

Average annual increase 23 per cent.

Such a census, necessarily, cannot be wholly correct. Perhaps the best that can be claimed for it is that it is indicative of the effect which the teaching of commercial subjects has upon men who have the courage to continue in college at night through a period of three or four years to complete this course. Such men are above the average.

But along with the general replies sent in response to the census queries were numerous letters, some of which referred particularly to the courses in business law. Part of one of these letters is presented herewith.

"The course helps every one of us to speed up. It encourages self-confidence, stimulates thought, broadens views, and places business on the same plane as the professions. The training in the principles underlying business will enable the members of other classes to avoid many years of plodding, painful experiences with their accompanying heart burnings, disappointments, and losses."

The presentation of such a letter may be unscientific. However that may be, such a letter shows a wholesome appreciation for collegiate training by men who seek business courses.

Each institution which offers the subject of business law as a part of its regular curriculum has its own problems to face. The plan offered at the Wharton School and its results has been detailed here because it is thought that at this institution the subject has been more widely developed than at any other institution in the United States. There is probably no other subject which fills so wide a gap in the college curriculum, which has sprung into existence in so short a time, and which gives greater promise of genuine service to the world at large than does the teaching of the subject of business law.

TEACHING BUSINESS ETHICS AND BUSINESS PSYCHOLOGY.

By JAMES E. LOUGH,

Professor of Experimental Psychology and Method, New York University.

Until recently business organizations and business operations were usually regarded as existing and functioning under conditions entirely peculiar to each individual case. We now realize that business is a science and that it is founded on certain general principles. These principles apply to all business operations and include among other topics business ethics and business psychology.

Business ethics must not be confused with business etiquette or with the conventions of business. Business ethics deal with the principles of morality governing business operations and with the duties and obligations of business organizations to other organizations, to competitors, to employees, to investors and to the public.

The same principles of conduct that govern the action of the individual apply equally to the activities of business. The obligations of honesty, uprightness, truthfulness, etc., must be recognized by the corporation as well as by the individuals constituting the corporation.

The aim of a course in business ethics, therefore, will be to teach students to apply the general principles of ethics to business operations. The course should include:

1. The consideration of the evolution of morality.
2. The causes which have produced morality.
3. The necessity of morality.
4. A study of the virtues and duties with special references to business.
5. Following the discussion of the more formal topics of ethics, consideration should be given to the practical development of ethics as shown in the interest of the larger corporations in welfare work among the employees, the organization of cooperative

clubs, vacation clubs, etc., the general tendency on the part of large corporations to look on the employees as human beings rather than as mechanisms.

The method of instruction is a matter of the greatest consequence. It is most important that the instructor himself should be a man thoroughly familiar with business conditions and who also holds the highest reputation for business integrity. The course must be inductive in nature, must avoid academic discussion and formal definitions, and rich in illustrative material drawn from business.

The general course in business psychology must first of all present in systematic order the essential facts of psychology so far as these apply to business operations. For example, attention, apperception, sensory elements, types of imagination, judgment and reason, emotion and will. This should be followed by a study of the individual, his natural and acquired capacities and other traits that constitute the elements of his personality.

The following traits should be included in the general course:

1. Physique. 2. Knowledge as a business asset. 3. Mental ability, as distinguished from knowledge. 4. Disposition. 5. The will. 6. Trait Chart.

Following this the course should present practical suggestions and exercises for increasing the strength of undeveloped traits.

If time permits, some of the more exact methods of psychological measurement may be introduced in connection with the trait chart, or this subject may be treated in a more advanced course.

The psychology of salesmanship, the psychology of advertising, etc., constitute special developments of the psychology of business and should be given only a very general treatment in the Introductory Course.

TEACHING BUSINESS ORGANIZATION AND ADMINISTRATION.

By ARTHUR SWANSON,

Northwestern University School of Commerce.

The title, business organization and administration, is applied to so many different types of courses at the present time that it is somewhat difficult to define the subject under discussion. A survey of the courses now being offered in thirty-four universities and colleges under the head of business organization, management or administration indicates that there is little uniformity in the subject matter taught in these courses. The latitude, in fact, is so great that I have found it necessary on several occasions after going over the matter with a student seeking admission from another institution to require him to take the courses in business administration offered in our institution even though he had had courses given under similar titles elsewhere.

The material now taught in such courses includes part or all of the following: Forms of ownership such as the individual entrepreneur, the partnership, and the corporation with particular emphasis on the legal phases of the last two; combinations and trusts; military and political organization and leadership; organization and management of the operating department of a business; Taylor's system of management; office organization and management; factory organization and management; merchandising; farm marketing; and foreign trade. It is evident that courses made up of scattered material from the above list must vary widely.

This variety is illustrated by the following descriptions of courses given in different universities and colleges.

1. A discussion of the methods employed in organizing and financing modern business institutions and especially of the general methods of management; cost keeping, price making, advertising, selling, buying, correspondence, shipping, relations with laborers, with the stock market, with the public and similar topics as viewed from

the standpoint of the business managers of large enterprises. The main purpose of the course is to note the way in which the general principles of economics are seen and applied in actual business life.

2. Business enterprises and their organization; individual proprietorship, partnership, and corporation. Organization for operating purposes and the effect of the organization on business and technical efficiency. Commercial and industrial associations.

3. The principles underlying the organization of manufacturing and distributive industries. The location and arrangement of factories, the division into departments, cost-keeping, marketing of products, exchanges, wholesaling, retailing, advertising, credits and collections are included in the study.

The great diversity in the subject material is not to my mind a discouraging fact as it is to be explained principally by the newness of the subject. The teaching of business organization and administration in our colleges and universities dates back, only in very few instances, to 1900, and most of the courses have made their appearance within the last five years. Many of the present teachers of these subjects have not had any systematized training in this special field for the very obvious reason that such training was not to be had. Instead they have approached it from many different directions. Some are economists who have turned to the teaching of business, others are engineers, and others are men trained in corporation finance or accounting. Some of these have had business experience but most of them have not. In each instance, these men have had to work out courses of their own with such little assistance as they could gain from fellow teachers and a generous but diffuse literature. Added to this, no text has as yet appeared which has found a very general acceptance. The publication of such a text will undoubtedly accomplish much in the way of standardizing the courses.

The present diversity of subject matter is, no doubt, intensified by the fact that many institutions have introduced only one or two brief courses into which they have crowded most of the topics in the whole range of business organization and management. In those institutions wherein considerable specialization has taken place it has been necessary to give more thought to the content of courses. As specialized courses are developed in the field, I believe that this will tend to react on institutions giving only one or two courses and cause them to assume the character of elementary courses rather than be a final treatment of the whole subject. My thought is that it will soon be recognized that the subject of business organization and administration can not be treated comprehensively in one or two brief courses and that instructors, who are limited in the time that can be devoted to this work, will treat of the fundamentals only as is now done in the study of economics.

It may be that it is too early at this time to attempt any classification of the subject material that might be regarded as falling within the field of business organization and administration, but I believe that some suggestions aimed in that direction may serve to provoke helpful discussion.

The study of business organization and administration means, as I view it, a study of business enterprises, their structure, methods and policies with particular attention to the ascertainment of the principles underlying and determining successful business organization and administration, and an additional study of the observed facts and principles of other fields of knowledge as they bear on this subject. These peripheral fields include especially economics, psychology, sociology, and accounting.

Business organization and administration divides itself functionally into the organization and administration of ownership, and operative organization and administration. By the organization and administration of ownership I mean the principles, methods, and policies involved in centralizing and controlling the authority of multiple owners in a partnership and corporation. By operative organization and administration I mean the principles, methods, and policies involved in the execution of the functions for which the business was established. Ownership organization and admin-

istration is a subject that had been prepared for teaching purposes from several viewpoints before the advent of courses in business organization and administration. This is especially true of the legal and financial phases which must inevitably continue to be extremely important in any study of the subject. In commercial law courses, the organization of the partnership and corporation has been treated from the legal viewpoint, and in courses in corporation finance it has been treated from the point of view of the financing and financial control of the business. There arises the question of the feasibility of introducing a new course in business organization and administration covering essentially the same field but from a strictly organizing and administrative viewpoint. Personally, I believe there is a special "organization and administration" viewpoint which I fear does not receive due attention in legal or financial courses covering these subjects, but I am somewhat skeptical as to whether it would be worth while for a student to go over the whole ground to get this viewpoint, if he had already had thorough training in the legal and financial phases of the subject. At the present time, this question is being studied at Northwestern University. A survey is being made of the subject matter presented in the law and corporation finance courses with a view to determining whether they cover the subject adequately from the organization and administration side or could be made to do so.

Naturally, there will be no question regarding the value of a course dealing with the organization and administration of ownership, when the legal and financial phases are not adequately covered.

Speaking broadly, I believe that too much attention has been devoted to a study of ownership, as I have defined it, in courses on business organization and administration. This is to be explained, I believe, by the circumstances that the material for this phase of the subject was early organized for teaching purposes.

It should be clearly understood that I regard the studies of business finance and business law as distinct subjects related to but standing side by side with the study of organization and administration. Financing a business, for instance, is a subject in itself which will be influenced by the organization of the business and in turn will influence the organization and administration. Its principal field, however, lies outside of the immediate sphere of business organization.

In the study of operative organization and administration I believe that the approach should be made in the first place from the viewpoint of the fundamentals common to all business, though in varying degrees, and secondly, from the viewpoint of the specific problems common to such divisions as production and distribution and such subdivisions thereof as the teaching facilities will permit. The thought is that a course in fundamentals should precede and serve as an introduction to more applied courses.

The fundamentals to which I have reference appear to me to be as follows: (a) The functions of organization and administration; (b) the limitations; (c) the dependence of organization and administration on the purposes of a business; (d) the delegation of authority; (e) the fixing of duties and responsibility; (f) the conditions necessary to administrative control; (g) the specialization functionally or divisionally of authority and administrative direction, and of the work to be performed; (h) the standardization of materials, methods, and policies; (i) the assembling, classification, dissemination, and recording of information; (j) the personal correlation of men and departments, and the mechanical correlation of materials and equipment; (k) discipline; (l) incentives including all forms of compensation and other inducements; (m) employment and discharge.

In the study of these fundamentals of organization and administration, illustrative material should be drawn from a very wide field so as to give the student a thorough appreciation of their importance and universality. That they are universal in the field of business, regardless of the specific purpose or character of the business, I regard as a safe assumption. In some businesses, certain of these essentials

are more important than in others, but they are present in a varying degree everywhere. As stated, their significance becomes apparent only upon considerable application to actual business situations in diverse industries. Thus, in a course concerned with fundamentals only, even if that course is to be followed by more applied courses, it is necessary to include a large amount of illustrative material or to develop problems designed to illustrate the application of the fundamentals. The purpose of such a course is to train the student to think in terms of fundamentals when studying the more specific problems of organization and administration.

Following this elementary study, strictly applied courses should be given in production and distribution, in which a presentation can be made of specific problems of organization and administration in the light of the fundamentals. In the field of production, a course in factory organization and administration can well be supplemented with specialized courses in such subjects as motion study, efficiency standards as applied to production, and production costs. In the field of distribution, a course in merchandising or marketing can be supplemented with specialized courses in foreign trade, advertising, sales organization, and management, credits and collections.

FACTORY ORGANIZATION AND MANAGEMENT.

Assuming that the course in factory organization and management is a specialized part of a general plan to teach organization and management, this course will be laid out with a view to studying the problems of factory organization and management in the light of the fundamentals already discussed.

The special problems include: The development of classifications of industries with reference to the effect which the type of process, nature of orders, amount of investment in plant, type of labor employed, and other factors, have upon the general types of organization, layout, and administration.

Location, construction, and arrangement of plant with a view to promoting efficient organization and operation.

Control of production: Methods of controlling production, with all that these mean in the way of planning, routing, dispatching, and time setting, and the correlation of production with sales.

Control of materials: Establishment of standards, purchase, receiving and shipping, storage, handling and recording, inspection.

Labor control: Employment, establishment of standards of individual output, methods of measuring output, wage systems, and policies in relation to men. Assembling and use of cost and statistical information as a factor in administration.

In most, if not in all, of the above specific problems the fundamentals previously enumerated apply.

MERCHANDISING OR COMMERCIAL ORGANIZATION AND ADMINISTRATION.

In such a course as this the purpose is to study the organization and management involved in the merchandising of manufactured goods and the marketing of raw products. As this course is subsequent to the one in fundamentals, the student is guided in his study of particular kinds of organization and management and comes to understand that the specific types are not different in principle but are special forms which these principles assume when different objects are sought and varying conditions obtain.

The study of merchandising when approached from the viewpoint of organization and management, should include all the more important problems that confront the merchandiser in the various classes of businesses. Many problems are common to a large number of businesses representing different classes and these problems can be

treated separately. Other problems are peculiar to specific classes of business and can be best treated in their relation to the industry in question.

The subject matter of such a course would include for each type of merchandiser—such as the farmer, manufacturer, broker, manufacturer's agent, and the various kinds of wholesalers, retailers and retail agents—the problems that arise in each of the many types of merchandising, whether domestic or foreign. It is necessary, in my opinion, to treat separately the problems in each of the types because the type or plan of merchandising is one of the principal determinants in the consideration and solution of the problems.

METHODS OF TEACHING.

Although in the past most of the teaching in Northwestern University, especially in the course of fundamentals has been done by means of lectures and discussions, our experience has been that specially adapted problems are extremely helpful. It is very difficult, however, to find problems that are specific and this explains why we do not utilize the problem method to a much greater extent. In proportion as time permits of the collection of problems, our instruction will be based much more largely on the problem method.

A number of business concerns, whose managers are especially interested in education, have permitted advanced students to make a special study of their organizations. A close range observation by the student of the workings of a number of organizations contemporaneous with class study is beyond doubt the most effective way to teach business organization and administration. This method involves a very close cooperation of business houses with the school. This cooperation may be worked out in one of several ways. The method devised by Prof. Schneider of the University of Cincinnati offers one solution. Another is to secure the permission of a number of firms to allow students to spend some time in the study of their organizations. Still another is to devise a plan whereby students can devote part of their time, such as vacations, in business.

The difficulty encountered in any plan of cooperation is to place the student in a position where he can study the organization as a whole and to enable him to study several organizations at close range.

IS THE TEACHING OF BUSINESS ORGANIZATION AND ADMINISTRATION PRACTICABLE?

There are, we know, those who question the practicability of teaching business organization and administration and who believe that the man who enters business with a well trained mind regardless of the character of the training has the same opportunity to achieve success as one who is especially trained in these subjects. The basis for this opinion is that the subject material of business organization and administration is so indefinite and intangible that it cannot be placed in teachable form and transmitted to the student. The student, it is maintained, can absorb this information only by experience and observation.

Viewing the question from a theoretical viewpoint, I believe that special training on this subject can be made practically and culturally valuable. There are ascertainable facts and these can be classified and studied. This process is essentially educational. Supporting this assumption, experience proves clearly that business organizers and managers find courses in business organization and administration very valuable.

In conclusion, I wish to point especially to the unstandardized character of the courses in business organization and administration and to suggest the timeliness of discussion having as its objective greater standardization.

THE TEACHING OF STATISTICS IN TRAINING FOR BUSINESS.

By E. DANA DURAND,

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This paper has reference to the place of statistics in the curriculum of institutions of collegiate or university rank which aim to prepare students for a business career, whether in private or public business. It does not refer to institutions of lower rank.

In view of the enormous part played by statistics in modern industry and commercial life, it needs no argument to show that statistics should have an important place in the curriculum of any such institution. It is difficult to conceive how either governments or private business concerns could conduct affairs intelligently and successfully at the present time without extensive use of statistical data. A knowledge of the facts and conditions pertinent to or affecting a given business is essential to clear judgment as to policies in conducting it. A large proportion of the facts required relate to aggregates, to group phenomena, and group phenomena can ordinarily be described and measured only by statistical methods.

Many of the courses ordinarily offered in schools for business training include, as an important part of their subject matter, statistical information. Sometimes this takes the form of actual figures in text, tables, or diagrams; sometimes merely of descriptive statements derived from statistical material. For example, courses in commercial and industrial geography must rest largely upon statistical information. Courses in corporation problems, transportation, insurance, money and banking, public finance, labor problems, marketing methods, and various other subjects are bound to make use of much statistical material if properly conducted. If courses of this character are to be of the greatest practical value, it is imperative that the instructor should himself be familiar with the important statistical materials in his field, and should have such knowledge of statistical methods as will enable him properly to criticize those materials, to analyze them, and to draw conclusions from them. Similarly, it is most desirable that students in such courses should be made familiar by actual use with the more important sources of statistical information in the several fields, and should be taught to look at such statistical data critically. The instructor should not be content merely with quoting statistics and assigning text-books in which statistics are presented. He should require his students to read extracts and compile data from original statistical sources; only thus will they in the future be able to make practical use of the vast mass of valuable information derived from such sources.

The great bulk of the information which the student preparing for a business career should gain regarding statistical facts and the sources of statistical material, and even much of what he should know regarding statistical methods, should come as incidental to courses not primarily designated as courses in statistics. It is doubtful whether there is any place in the curriculum for courses dealing exclusively with statistical facts as distinct from the principles of statistical methods. Statistics are an important form of descriptive material in many fields, but they are not the only form, and statistical data should ordinarily be presented along with nonstatistical information. There is, however, in any school for advanced business training, need for one or more courses of study dealing with statistical methods.

I shall not enter into the question whether certain branches of study, ordinarily classified under the general head of accountancy, may properly be considered as branches of statistical study. There is no sharp distinction between accounts and statistics. Even, however, if all the debatable ground be assigned to the field of accountancy, there still remains a large place for the study of statistical methods applicable to data not derived from the keeping of accounts. The incidental light as to problems of statistical methods which the student should obtain in connection with descriptive courses, such as those in industrial and commercial geography,

public finance, transportation, and the like, is not sufficient. Adequate discussion of the broad principles of statistical methods and adequate practice of their application can be obtained only in specialized statistical courses.

Whatever be the special career for which the student in a business school is preparing, he needs to know a good deal about statistical methods. He needs to be able to grasp statistical material promptly and clearly, to interpret it correctly, and to draw just conclusions from it. The chances are moreover that a large proportion of the students will in their future work have occasion to collect more or less statistical material, or to prepare statistical tables and diagrams for their own information, or that of their business associates, or of the general public. At least one elementary course in statistical methods is therefore useful for all students preparing for a business career.

Moreover there is an increasing demand both in public and private employment for expert statisticians. The Federal, State, and local governments are more and more coming to realize the need of improving the quality as well as increasing the quantity of the statistics which they publish. They are coming to recognize that the higher forms of statistical work require experts, and not merely clerks, and they are increasing their call upon colleges and universities to train such experts. Again there is growing call for expert statisticians on the part of commercial organizations, trade journals, and even of individual business concerns such as railroads, insurance companies, banks, large manufacturing corporations, and the like. A comprehensive school for business training should, therefore, be prepared to turn out such expert statisticians, and for that purpose one or more advanced courses in statistical methods should be offered in addition to the general course for all students above suggested.

TEACHING OF ACCOUNTING.

By JOHN B. GEIJSBEEK,

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How to teach accounting as a part of the college course in commerce is the subject assigned, and it will be considered under the following subdivisions:

1. What kind of accounting is meant.
2. The education of a person desiring to become an accountant.
3. The necessity for such an education.
4. It should be a college education.
5. The method of teaching the subject.
6. The qualifications of the student.
7. The post-graduate course seems better.
8. The research of the American Association of Public Accountants.
9. The universities now having such courses.
10. The subjects to be included in the course.

WHAT KIND OF ACCOUNTING IS MEANT.

Contemplating the subject upon which I have been asked to present a paper (the reading of which shall consume no more than 10 minutes) as a link in the educational program of this the Second Pan American Scientific Congress, it was somewhat difficult to determine what kind of "accounting" the assignor of the subject had in mind. It is, of course, to cover the work of an accountant. However, the popular conception of the meaning of the word "accountant" is not that of the expert usually termed a public, certified public, or chartered accountant. The public in general designates an accountant as any one having to do with financial book account transactions. The

expert accountant, however, terms such a man a bookkeeper or entry clerk. Considering further that the number of expert or public accountants operating in the South and Central American Republics is very limited, and as I interpret the purpose of this congress to be for the exchange of information beneficial to those countries, I have assumed that the assignor of the subject meant that the work in question should not include the work of a public accountant or of that portion of the contingent of bookkeepers which is occupied with the duties of a so-called entry clerk, but should cover such work as aids materially in the management of mercantile pursuits through the furnishing of financial statements and statistics obtained from data after the entry clerk has completed his work and finished the trial balance.

THE QUESTION BEFORE US THEN IS THE EDUCATION OF SUCH A PERSON.

In order that such a person may intelligently compose the data and statistics mentioned in a relevant manner so that it can be used by the management, it is at once apparent that such a person must be conversant with the thoughts and acts of the management he is to serve. I do not say that the training should go to the full extent of that needed for the equipping of a manager, as that includes executive and other adaptabilities to a greater extent than that required for the tabulation of financial data and operating statistics; but it would be ideal, or at least preferable, to have the young mind trained along lines parallel with the highest, most modern, and best thoughts and acts of those of the managements which the accountant will be called upon to assist. If the management is of the best, the training will harmonize with it. If the management is not of the best, the training will recognize the management's short-comings and while able and willing to reduce the application of its knowledge to the lower standard, it will continually endeavor to improve that standard.

Assuming, then, the necessity for a training, we see at once that it should be one that must cope with the slow but effective school of experience of the most successful business men. It also must be accomplished in a very much shorter time and along altogether different routes than that furnished by the school of experience.

AS TO THE NECESSITY FOR SUCH EDUCATION THERE CAN BE NO ARGUMENT.

The public schools do not furnish such education and not even the elementary foundation for the same. It is stated that there are upward of 500,000 commercial students or about 40 per cent of the high school attendance taking commercial courses in the United States of America. These courses, however, are but special and elective courses in which a feeble attempt is made to teach a few of the rudiments of business procedure, but they are taught very faultily and by persons disqualified from business through utter inexperience in that line. Such commercial subjects could not be said to embrace more than good courses in typewriting and elementary bookkeeping, the very subjects in which the man whose education we are here considering is least interested. Before public school educational gatherings I have repeatedly urged that the high school curricula be reversed; that compulsory studies should be made elective and the electives be made compulsory, because statistics show that only one-tenth of 1 per cent of the children who enter the public school ultimately reach the university through the high school proper. A large portion of the remainder leave the public school at various ages and times to engage in business pursuits as sales or office clerks or as helpers in manufacturing, agricultural and domestic enterprises. Yet the entire high school curricula of compulsive studies is arranged so as to enable a few students to qualify at universities without entrance examination. This curricula of compulsive studies has nothing whatever for the proper or even partial equipment of those who have to go out and face the cold world with only a partial education. The conclusion, therefore, should be that the young or future accountant has received in the high school

no foundation whatever which will aid him in the slightest in the pursuit of his commercial duties.

The twentieth century is undoubtedly an age of commerce, and with the close of the present war for commercial supremacy, with a shifting of the balance of trade and center of money, credit and commerce to America, there is no argument as to the necessity for commercial training. History is repeating itself and the Americas are in line for commercial promotion. But even under normal conditions commerce is ever the life of a nation and it should prepare posterity to retain its hold on whatever it now possesses in the way of commerce. However, modern commerce can not be successful without modern accounting.

IT SHOULD BE A COLLEGE EDUCATION.

As the accountant must be able to cope, or at least to understand or be in sympathy with the thoughts and acts of the mature mind of the management of the enterprise he is destined to serve, it would seem clear that the more mature the mind of the student of accounting is, the better for all concerned. As the accountant has to rise to the level of experience of those he wishes to serve, he should have advanced enough above the high school age to understand the older contingent which usually manages the affairs of commerce and industry. If these two premises are admitted as correct, then the college and university are the only places where such an education should be given, as no other institution can properly provide an adequate education for men of mature age.

AS TO THE METHOD OF TEACHING.

Inasmuch as it has been shown that the student, to be successful, must be familiar with the management's thought (which has obtained its status through the school of experience), it follows that in as many subjects as possible the method of teaching must be as nearly identical to the actual operations and as practical as the student will later find them in business. Here is where the greatest difficulty in commercial courses is encountered. If we teach the subjects taught in manual training high schools, we can have the student do the very thing he will be required to do when he becomes a man. The same applies to the teaching of the subjects of bookkeeping, typewriting and stenography.

Not so much can be said of the teaching of professional subjects, such as medicine, dentistry, law and accounting. However, through long experience in teaching, a system has been developed by which students of medicine and dentistry can enjoy actual practice of their contemplated profession during school hours in free hospitals and free dental dispensaries. Time has shown a way for these professions and public opinion has approved it, although there are still numerous individuals who would not subject themselves to the practice of these inexperienced students.

More recently the law students, through free legal dispensaries, are enabled to practice during their course in the university on cases entrusted to them by poor people under the guidance of an experienced practitioner connected with the university. This has proven so successful that quite important cases are off and on thus handled by students.

The subjects of accounting and commerce have not yet been taught long enough to have found a method of imparting in a practical way the knowledge required for those students who desire to take places higher up in their vocation. This seems strange, however, as there appear to be no insurmountable obstacles in the way, for there are numerous charitable institutions and countless small business concerns upon which students can practice, under the guidance of experienced leaders, without doing damage to the business practiced upon in case the student would not be capable of properly handling the subject matter. Neither will such work interfere with that

of the public accountant (who may raise objections to this method), as it is estimated that but one-tenth of all business enterprises avail themselves of such services at the present time.

The obstacles that are claimed to be encountered should be attributed, not so much to the subject matter, as to the leaders of the students or, in other words, to the faculties of the various schools conducting such courses. Most of the university schools of commerce are under the control and supervision of the economic departments of the universities and as such are controlled (with the exception of a few of them) by the trustees and faculties of the universities who have, and always have had, charge of institutions aiming at cultural education. These authorities would appear to be too narrow (commercially considered) to permit the commercialization of their "liberal arts" and thus not willing to inculcate into their views or acts any practical commercial ideas. Neither can they see any mental discipline in nontheoretical studies. They are, therefore, unable to recognize the high salaries practical professional men, such as attorneys and certified public accountants, office, business, and factory managers, receive in the business world and, as a consequence of this inability, they refuse to allow sufficient compensation for the teaching of commercial subjects to warrant capable men devoting their time in their institutions. These technically trained college professors and trustees are so narrow on this subject that they have even refused to put a man in the proper place on their faculties simply because he did not have the required handles in the form of high-sounding college degrees.

The result of this has been that, instead of aiming to teach in these institutions as much of the practical as possible, the professors keep as far away from teaching the practical as they can, for pure self-protection. There are, however, a few very notable exceptions to this rule.

It must be considered that the impression has gone abroad that the number of practical and experienced men who can teach is very limited. On the other hand, experience has proven that these practical men, if left alone, will learn how to teach properly far quicker than the majority of college professors did when they began to teach.

As teaching is the guiding of the student in his studies, so the value of teaching accounting by a method as nearly identical to the actual operations, and as practical as the student will later find them in business, can be best illustrated by analyzing the methods of studying.

We probably recognize very readily two modes of studying—the one conscious, the other subconscious. Conscious studying is sometimes called "grinding" or "plugging," or, in other words, forcing the mind by rote or mere will power to absorb something in which it has no interest. It is obvious that this method is unnatural and therefore false. This is the customary method in grade and high schools, as well as undergraduate colleges. It is the method of digging the knowledge out by the teacher who, so to speak, tries to pour it into the brain in teaspoon or homeopathic doses.

The subconscious method, however, is the natural, and, therefore, the most successful one. It is the method by which the child learns to eat, walk, and play before it can speak, and, later, the art of speaking itself. It is the method of developing a real interest on the part of the student in his subject. It is, as one educator has aptly put it, "the subconscious observation by one's subconscious mind." It is the only thing that really and eternally exists in this work—the motive power of the universe, the course of all effect—namely, thinking. It is the developing and applying in a methodical way of the mental impressions received, with the object in view of imitating them at some future and opportune time for the specific purpose of ultimate self-preservation. This development (which is that of natural instinct) evidently proceeds along three distinct routes apparently furnished by our senses.

First we see it, the picture is formed, then we read or hear about it by collateral reading or conversations and lectures, and lastly we apply it by experimenting with it and imitating it. Without seeing, it is difficult for many to imitate; hence to learn most we must see much, and to imitate for practical use we must see practical things.

THE QUALIFICATION OF THE STUDENT.

This, at the time of admission to the commercial courses, has also something to do with the difficulties of teaching accounting in a practical way. The student should first have a fundamental and theoretical training so extensive and so thorough that he will comprehend the meaning of technical terms, and has at least learned so much about accounting, theory, and terminology that he can readily understand the various arguments or disagreements existing among accountants when a certain term is used or a certain condition arises. He should be thoroughly familiar in a theoretical manner with the results which will follow in case he adopts either the one or the other definition or mode of procedure upon which no uniformity now exists among accountants and business men.

This is very much the same as with the medical student. We would not expect him to be able to perform a certain operation on the body of a person unless he was sufficiently familiar with anatomy and its terminology to understand the technical admonitions of the instructor or to know what he might expect after having performed certain acts on the patient.

Very much the same applies to the law student, who should know what the result may be of the introduction of a certain class of evidence or the filing of a certain plea before he could advise his client to file a certain plea or to obtain certain evidence.

In this connection it should be reiterated that we are not considering the subject of teaching bookkeeping but the subject of that portion of accounting which has for its elementary foundation the knowledge of bookkeeping and which is, primarily, the preparation of such data, statements, and statistics from the books, after they have been completed, to become guides to the thoughts, acts, and conduct of the management. Having this premise in view, it is not difficult to see that the student should be thoroughly familiar with commercial law, commercial history, commercial economics, commercial geography, and like subjects, for without these he could not select between the relevant and irrelevant data, neither could he marshal his statistics along the thoughts and needs of the management, which has learned these subjects through experience.

As such a person could make his knowledge and advice available in no other way than through oral or written reports, he should have a far better knowledge of the English and foreign languages than is usually attributable to a high-school graduate. He should be master of the language he is to use because, whether his reports are verbal or written, they will principally consist of conclusions, arguments, and advice. These, to be effective and to be understood, must be couched in practical business language.

By the time, therefore, the student begins to study his higher accounting, and, especially when he begins to do it in a practical way, he must be master of the several subjects mentioned. The conclusion would be that, if the method of teaching is to be practical (and we must obtain the services of practical men to do this practical teaching), then the student must be mentally capable to follow such practical teaching or he will absorb but a very small percentage of the matter brought before him. A further conclusion may also be drawn that such a practical subject should not be taught in a practical way until the junior or third year in standard universities has been reached.

A POST-GRADUATE COURSE SEEMS BETTER.

It is adapted to the teaching of practical experience. A liberal and academic education should be a preparation for a special professional education and should not be a part of it. Conscientious and tell-tale professional study can not be profitably undertaken except the student has been made a thinking and observing man through his academic preparation. A business man while a student, through his compulsory touching of elbows with the business world, will be able to grasp the importance of business. The undergraduate student can not possibly be expected to consider business as a serious thing until he has been thoroughly saturated and satiated with the foolishness usually attendant upon the first three years in college. Experience has taught, however, that post-graduate students come to these practical business courses with more incentive and more practical reasons.

In the undergraduate courses the student has been taught to form a habit of being led to information (much the same as an unwilling horse is led to water), with the result that very little of the information is permanently absorbed. A post-graduate practical course in business and accounting should reverse the habitual method of liberal-art colleges by forcing the student to hunt the information and think for himself. If once started on this road in the right direction his four years of college work have at least given him that trained intelligence which will make for results in a very much shorter time than the rough and tedious road of experience which a youngster must tread when facing the cold world in an attempt to make a living.

As business ability consists chiefly in grappling with the daily problems in seriousness and with earnest determination, it is necessary that the training in directing ability (so lacking in young business men) should only be attempted to be given to graduates and not to undergraduates. Therefore, a course in the kind of accounting here considered, which is to aid commerce and business, to be successful should be a post-graduate course. At least this should be the conclusion if we are aiming toward practical training, equaling to some extent the school of practical experience through hard knocks.

Many universities teach nothing more than bookkeeping in their courses of accounting. This occupies so much of the available time of the student in the two or three year course that no further time is available upon which to base a course of practical teaching of the business problems which will confront the kind of student we have herein observed.

The reason for the failure of these institutions to rise to a higher plane of practical instruction in accounting subjects is due to three causes, two of which we have mentioned, namely, the aversion of academic trustees to commercialism and, second, the unpreparedness of the student. While there is no doubt that a number of universities have advanced beyond the obstructions mentioned in the first reason, and while they are willing to give practical instruction, they are unable to do so, probably through no fault of theirs. This brings us to the third reason. Institutions giving such courses in accounting and commerce as have been here described as being necessary must, to be successful in their teaching, have an exceedingly high standard and must be large institutions—this for the reason that it needs an enormous influence over business men, through its graduates, in order to get that entrée into business houses which is needed for the practical education of the student. An institution with a large number of graduates among the owners and managers of factories and business houses who have confidence and pride in their alma mater, will be the only institutions that will be able to obtain this entrée. The universities should be wealthy and of recognized standing in order to insure honesty of purpose in research and be financially capable to carry out result-telling researches such as business men will come to respect. These conditions are necessary so that students may be able

to go into business houses under the guidance of their professors in order to study business conditions on the ground and to apply their theoretical knowledge in a practical way without disturbing the routine of the business under investigation or costing the management time, money, and annoyance. The university should have standing and influence even if the practical teaching is not extended beyond small commercial enterprises and charitable organizations, for even these would not permit the interference provided assurance could be obtained beforehand that a benefit will be derived and, above all, that the person or institution permitting the practice of the inexperienced student will have guaranteed that his sacred business secrets will not be divulged and that his errors will not be made light of or ridiculed. The postgraduate courses of Harvard and Dartmouth Universities are at present the only American institutions providing such a practical course efficiently and successfully.

The use of accounting dispensaries is increasing, but even these will not result in the object herein desired. They merely teach higher bookkeeping in a more practical way. They do not provide the viewing and studying of business methods in actual operation; the argumentations with the management for the adopting of new methods or the rejection of suggested methods and improvements; nor for the tabulation, analyzation and study of constantly changing statistics, all of which necessities make just exactly the difference between theoretical methods of rote and practical methods of actual experience.

The college training here suggested should not be interpreted to be available only for the college graduate. While the advisability is here advanced of having a student be a college graduate, it is not intended that the idea should be conveyed that only graduates (as we usually know them) should follow such practical training in business. To maintain this would give a training of this kind only to a very few. On the other hand, it is contended that a college training to the business man, after he has gained some practical and worldly experience, reaches a far greater number and, therefore, must be of far greater benefit to the business community and, as a consequence, a better investment for nations. Facilities, therefore, should be given for business men to enter these courses without being required to answer the ridiculous, pedagogical entrance requirements, such as the New York University Regents' Counts, before they are permitted to take any of these courses.

The contention here is made, however, that the courses in commerce and accounting should be sufficiently long to permit first a graduation from the university with a three or four year course prior to the taking of the advanced course in practical accounting here urged. The aim should be to give the business man a college training rather than a college student a business training.

RESEARCH OF THE AMERICAN ASSOCIATION OF PUBLIC ACCOUNTANTS.

It has covered this subject to a great extent ever since the year 1911 and reference is hereby made to the reports of the educational committee of that association for the years 1911, 1912, 1913, 1914, 1915, and 1916.

The progress in the courses in accounting and in the method of teaching is carefully recorded in these reports and it is astonishing to note from these reports the increase in enrollment.

The writer was chairman of this committee for the first four years and those familiar with the reports of that committee will have recognized in the foregoing many thoughts expressed in them. His ideas were the culmination of years of observation and study of the institutions teaching these subjects, which was supplemented by his having been a practicing public accountant for over twenty years and dean for five years of the commercial department of a leading university in the West.

THE SUBJECTS TO BE INCLUDED IN THE COURSE.

The subdivisions of the courses in accounting are very numerous but, in general, they may be enumerated somewhat as follows: Philosophy of accounts, practical accounting, accounting procedure, accounting systems, simple accounting problems, advanced accounting problems, auditing, advanced auditing, private auditing, accountants reports, corporation finance, public and other financing, accountancy of investments, cost accounting, labor problems, economic statistics, graphical statistics, business and factory organization and management.

To these may be added special subjects of accounting, such as banking, railroads, life and fire insurance and public utilities, which are more specialized in their nature than the regular industries and business enterprises, due to the fact that the methods of accounting have been more definitely prescribed through commissions or bureaus established through legislation.

THE UNIVERSITIES NOW HAVING SUCH COURSES.

The following comprises that portion of the report of the Educational Committee of the American Association of Public Accountants, now called the American Institute of Accountants, for the year 1916 giving important data on the departments of commerce and accounts in twenty-seven of the American universities and colleges, and comprises all those which now have such departments.

	Boston.	California.	Chicago.	Cincinnati.	Colorado.	Columbia.
Approximate date of establishment.....	1913.....	1898.....	1898.....	1912.....	1914.....	1910 evening correspondence; 1916 school of business.
Where located.....	Boston, Mass.....	Berkeley, Cal.....	Chicago, Ill.....	Cincinnati, Ohio.....	Colorado Springs, Colo.....	New York.
Is the school endowed, and if so, to what extent?	Shares in general university endowment.	\$375,000.....	Shares in general university endowment.	No.....	\$100,000.....	Part of general work of this university.
Preliminary education required for "regular" students desiring a degree.	4-year high school or equivalent.	4-year high school.	High school.	College entrance requirements and two years in college of liberal arts.	High school 4 years.	High school for evening courses; 2 years of college for school of business. (1)
Length of course needed for the degree, certificate or diploma.	4 years.	4 years.	4 years.	3 years.	4 years.	
Name of degree conferred.....	B. B. A.....	B. S.....	Ph. B. A. M., Ph.D.	Bachelor of commerce.	Bachelor of arts in business and banking.	B. S., M. S.
Does school conduct day classes, or night classes, or both?	Both day and night.	Day.	Day.	Night.	Day.	Both.
Required courses for day students, state total number of hours for degree.	1,000 hours required; 1,800 hours for degree.	Approximately \$22 per degree; 900 required.	36 majors.		100 semester hours.	24 points. ²
Effective courses for day students, state total number of hours for degree.	800 hours for degree; 300 in business.				28 semester hours.	Altogether 34 points.
Required courses for night students, state total number of hours for degree.	600 hours required; 900 for degree.			32 hours ¹ .		24 points.
Effective courses for night students, state total number of hours for degree.	300 hours elective; 3 years business experience.			28 hours.		48 points required for certificate.
Can student complete course in less than required time for degree by taking standing in subjects through special examinations and without attending classes? In course aimed to give a training preparatory for C. P. A. examinations?	No.	Only in exceptional cases.	Not specifically for that purpose.	No.	No.	No.
Does school have a commercial laboratory to provide the equivalent of practical experience?	Yes.....	Yes.....	Yes.....	Yes.....	Yes.....	Yes.
Does school conduct correspondence courses in accounting?	Actual experience under supervision of college necessary.	do.....	No.	No.	No.	No.
Approximate tuition for full course.....	Courses being considered.	Free to residents of State, \$80 to outsiders.	\$480.	Residents, \$165; Non-residents, \$255.	\$240.	Estimated at rate of \$6 a point.
Total enrollment for the year 1914-15.....	\$500 day; \$320 evening.	311.....	220.....	187.....	50.....	Impossible to ascertain.

Total enrolment for the year 1915-16.....	825.	341.	250.	196.	80.	Impossible to ascertain.
Total enrolment since establishment.....	1,260.	3,118.				Do.
Number of graduates 1914-15.....	1.	39.	33.	1.	2.	Do.
Number of graduates 1915-16.....	8.	39.	20.	0.	6.	Do.
Number of graduates since establishment.....	9.	299.		1.		Do.
Number of professors, instructors, lecturers and assistants without duplication.....	99.			13, not including lecturers.	4.	Evening 31; school of business 27.
Number of above practising the profession of accountancy.....	12.			2.		7.
Total number of C. P. A.'s among graduates.....	0.			None.	None.	
Total number of C. P. A.'s among lecturers.....	7.			2.		
Total number of C. P. A.'s among faculty.....	6.	1.		None.		

	De Paul.	Denver.	Duquesne.	Elksworth.	Illinois.	Indiana.
Approximate date of establishment.....	1912.	1908.	1913.	1915.	1902 (reorganized, 1915).	Bloomington, Ind.
Where located.....	Chicago, Ill.	Denver, Colo.	Pittsburgh, Pa.	Iowa Falls, Ia.	Urbana, Ill.	
Is the school endowed, and if so, to what extent?.....	No.	No.	No.	3,000 acres land.	No—state university.	
Preliminary education required for "regular" students desiring a degree.....	4-year high school course.	4-year high school course or equivalent.	4-year high school course.	None.	4-year high school course.	
Length of course needed for the degree, certificate or diploma.....	3 years.	3 years.	B. C. S. = 2 years; Bachelor of science in economics, 4 years.	2 years.	4 years.	
Name of degree conferred.....	B. C. S.	B. C. S.	B. C. S. and B. S. in economics.	No business degree conferred.	B. S.	
Does school conduct day classes, or night classes, or both?.....	Night.	Night.	Both.	Day.	Day.	
Required courses for day students, state total number of hours for degree.....			(¹)	Two years in accounting.	Averages 90, 130 hours for graduation.	
Elective courses for day students, state total number of hours for degree.....			(¹)	(¹)	Averages 40, 130 hours for graduation.	
Required courses for night students, state total number of hours for degree.....	1,206 hours class-room work, but half of which is elective.	960 hours.	(¹)	(¹)		
Elective courses for night students, state total number of hours for degree.....		120 hours, but not required for degree.	(¹)			
Can student complete course in less than required time for degree by taking standing in subjects through special examinations and without attending classes?.....	No.	No.	Yes.		Yes.	

¹ Certificate for two year evening course; B. S. for two-year course in school of business; M. S. after a course in business, conferring the undergraduate degree of B. S. and a course similar to that of Columbia University.

² Each count stands for one hour a week in one session; two sessions in the year.

³ And 3 years of supervised study of the business in which the student is engaged.

⁴ Day and evening: B. C. S. equals 1,206 recitation hours, § elective; B. S. in E. equals 2,400 recitation hours, § elective.

	De Paul.	Denver.	Duquesne.	Ellsworth.	Illinois.	Indiana.
	Yes.....	Yes.....	Yes.....	Yes.....	Yes.....	Yes.....
	Not yet.....	do.....	do.....	No.....	do.....	No.....
Is course aimed to give a training preparatory for C. P. A. examinations?	No.....	No.....	No.....	do.....	No.....	Yes.....
Does school have a commercial laboratory to provide the equivalent of practical experience?	\$315.....	\$300.....	B. C. S. \$300; B. S. in E. \$500.	No special tuition for accounting course.	\$150.....	Tuition charged for the correspondence course only —\$7.50.
Does school conduct correspondence courses in accounting?	59.....	63.....	160.....	450.....	454.....	30.....
Approximate tuition for full course.....	92.....	76.....	402.....	450.....	281.....	32.....
Total enrolment for the year 1914-15.....	166.....	225.....	None.....	None.....	Not available.....	
Total enrolment since establishment.....	None.....	13.....	None.....	3.....	43.....	
Number of graduates 1914-15.....	do.....	7.....	6.....	do.....	69.....	
Number of graduates since establishment.....	do.....	50.....	24, not including lecturers.	20.....	312.....	About 200.
Number of professors, instructors, lecturers and assistants, without duplication.....	28.....	34.....	8.....	8.....	2.....	1.....
Number of above practising the profession of accountancy	8.....	7.....	4.....	4.....	Not available.....	
Total number of C. P. A.'s among graduates.....	None.....	About 14.....	Several.....	Several.....	2.....	
Total number of C. P. A.'s among lecturers.....	3.....	7.....	5.....	5.....	2.....	
Total number of C. P. A.'s among faculty.....	6.....	7.....	6.....	6.....	2.....	

	Iowa.	Marquette.	Montana.	Nebraska.	New York.	Northwestern.
	1908.....	1910.....	1914.....	1913.....	1900.....	1908.....
Where located.....	Iowa City, Iowa.....	Milwaukee, Wis.....	Missoula, Mont.....	Lincoln, Nebr.....	New York.....	Chicago and Evanston, Ill.....
Is the school endowed, and if so, to what extent?	No.....	No.....	No.....	State institution.....	No.....	No.....
Preliminary education required for "regular" students desiring a degree.....	4-year high school.....	High school completed.....	High school graduate.....	4-year high school.....	4-year night work; 3-year day work.....	2-year credit from college of applied sciences for degree; 3 years for degree; 4 years for diploma.
Length of course needed for the degree, certificate or diploma.....	4 years.....	3 and 4 years for degree; 2 years for diploma.....	4 years.....	4 years.....	4-year night work; 3-year day work.....	3 years for degree; 4 years for diploma.
Name of degree conferred.....	B. A. in commerce; M. A. in commerce.....	B. C. S. and B. S. in economics.....	B. S.....	A. B. with certificate in commerce.....	B. C. S.....	B. B. A.....
Does school conduct day classes, or night classes, or both?	Day.....	Both.....	Day.....	Day.....	Both.....	Both.....
Required courses for day students, state total number of hours for degree.....	124 hours.....	B. C. S. 1,000 hours; B. S. in E. 1,060 hours.....	122 hours*.....	624.....	510.....	70.....
Effective courses for day students, state total number of hours for degree.....	33 hours.....	B. C. S. 540 hours; B. S. in E. 540 hours.....	.....	33.....	330.....	20.....

Required courses for night students, state total number of hours for degree.	Night students hardly ever qualify for degree.	Advanced standing given upon examination.	Yes	No	330.	20.
Elective courses for night students, state total number of hours for degree.	No.	Advanced standing given upon examination.	No.	No.	720.	28.
Can student complete course in less than required time for degree by taking standing in subjects through special examinations and without attending classes?	Yes	Yes	Yes	Yes	Advanced standing granted from recognised institutions. No examinations given without class work.	Yes.
Is course aimed to give a training preparatory for C. P. A. examinations?	do.	Yes	Yes	do.	Yes	Do.
Does school have a commercial laboratory to provide the equivalent of practical experience?	do.	No	No	do.	do.	Do.
Does school conduct correspondence courses in accounting?	do.	No	No	No	No.	No.
Approximate tuition for full course.	\$80.	No tuition—state institution.	No	No	Night \$437, day \$581.	\$360 day, \$300 night.
Total enrolment for the year 1914-15.	156.	150.	173.	173.	2,883.	733.
Total enrolment for the year 1915-16.	250.	225.	196.	196.	3,192.	903.
Total enrolment since establishment.	Impossible to ascertain.	376.	423.	423.	4,493.	4,493.
Number of graduates 1914-15.	do.	4.	4.	4.	243.	16.
Number of graduates since establishment.	do.	6.	6.	6.	288.	18.
Number of professors, instructors, lecturers and assistants without duplication.	do.	10.	10.	10.	1,359.	58.
Number of above practising the profession of accountancy	15.	30.	30.	30.	88.	26.
Total number of C. P. A.'s among graduates.	Impossible to ascertain.	No	1.	1.	15.	4.
Total number of C. P. A.'s among lecturers.	do.	do.	No	No	do.	27.
Total number of C. P. A.'s among faculty.	do.	do.	do.	do.	8.	Various.
	do.	do.	do.	do.	2.	4.

*A credit hour involves two hours of preparation, and one hour of recitation lecture or quiz.

Approximate date of establishment Where located..... Is the school endowed, and if so, to what extent? Preliminary education required for "regular" students desiring a degree. Length of course needed for the degree, certificate or diploma.	Notre Dame.	Ohio Northern.	Oregon agricultural.	Pennsylvania.	Pittsburgh.	St. Louis.
Name of degree conferred..... Does school conduct day classes, or night classes, or both. Required courses for day students, state total number of hours for degree. Effective courses for day students, state total number of hours for degree. Required courses for night students, state total number of hours for degree. Effective courses for night students, state total number of hours for degree. Can students complete courses in less than required time for degree by taking standing in subjects through special examinations and without attending classes? Is course aimed to give a training preparatory for C. P. A. examinations? Does school have a commercial laboratory to provide the equivalent of practical experience? Does school conduct correspondence courses in account- ing. Approximate tuition for full course..... Total enrolment for the year 1914-15..... Total enrolment for the year 1915-16..... Total enrolment since establishment..... Number of graduates 1914-15..... Number of graduates 1915-16..... Number of graduates since establishment..... Number of professors, instructors, lecturers and assist- ants, without duplication. Number of above practicing the profession of accountancy Total number of C. P. A.'s among graduates..... Total number of C. P. A.'s among lecturers..... Total number of C. P. A.'s among faculty.....	1913. Notre Dame, Ind. No. 4 years high school or equivalent. Degree 4 years, certificate 2 years. Ph. B. in commerce. Day..... 160. None. May complete course in 3 years if the student performs Not directly. Yes. No. \$100. No graduates as yet. First class 1917 (?) 20. None. do.	1895. Ada, Ohio. \$25,000. 4-year high school course or equiv- alent. 2 years. B. C. S. Day..... 912 credit hours. None. No. Yes. do. No. \$80. 150. 175. 7,290. 30. 30. 1,400. 10. 5. None. None.	1908. Corvallis, Oreg. State institution. 4 years high school. 4 years. B. S. in commerce. Day..... 2,446 hours. 548 hours. Limited extent on petition to college council. Yes. do. do. Free. 170. 178. 1,298. 20. 106. 14. 29. 4. 1.	1881. Philadelphia, Pa. High-school grad- uate. 3 years certificate, 4 years diploma. B. S. in economics. Both. 70. 70. 24. 24. Yes; by attend- ance at summer school. Yes. No. do. \$640 day, \$240 night. 2,265. 2,409. 14,945. 179. 331. 107. 77. 3. 6. 3. 3.	1908. Pittsburgh, Pa. No. High school..... 4 years for degree, 4 years evening for diploma. Both. 2 years, 16 hours per week. do. 1 year, 3 nights a week. 3 years, 3 nights a week. No. Yes. do. No. \$600 day, \$200 night. 168 day, 300 even- ing. 241 day, 755 even- ing. 24. 33. 121. 46. 15. 6. 6. 6.	1910. St. Louis, Mo. No. 4 years high school. 3 years. B. C. S. Night. 486. 405. No. Yes. Do. No. \$240. 180. 175. 506. 6. 20. 47. 31. 5. 6. 6. 6.

	Wisconsin.	Amos Truck-Dartmouth (post-graduate).	Harvard (post-graduate).	Cornell.	North Dakota.	University of Oregon.	Tufts.
Approximate date of establishment.	1900.	1900.	1908.				
Where located.	Madison, Wis.	Hanover, N. H.	Cambridge, Mass.				
Is the school endowed, and if so, to what extent?	State university.	(1)	Partly.				
Preliminary education required for "regular" students desiring a degree.	4-year high school course.	Bachelor's degree or years college work with high rank in scholarship.	Degree from accredited university or college.				
Length of course needed for the degree, certificate or diploma.	4 years.	2 years.	2 years.				
Name of degree conferred.	B. A.	M. C. S.	M. B. A.				
Does school conduct day classes, or night classes, or both?	Day.	Day.	Day.				
Required courses for day students, state total number of hours for degree.	73-81.	18 hours per week.	(4)				
Elective courses for day students, state total number of hours for degree.	59-71.	About 1/2 of courses elective.					
Required courses for night students, state total number of hours for degree.							
Elective courses for night students, state total number of hours for degree.							
Can student complete course in less than required time for degree by taking standing in subjects through special examinations and without attending classes?	Yes.	No.	No.				
Is course aimed to give a training preparatory for C. P. A. examinations?	do.	Yes.	Yes.				
Does school have a commercial laboratory to provide the equivalent of practical experience?	do.	do.	do.				
Does school conduct correspondence courses in accounting?	do.	No.	No.				
Approximate tuition for full course.	Free to residents, \$62 a semester.	\$280.	\$400.				
	484.	77.	166.				
	549.	88.	190.				
	4,921.	647.	965.				
Total enrollment for the year 1914-15.							
Total enrollment for the year 1915-16.							
Total enrollment since establishment.							

¹ But credit is not given toward graduation except on resident examination.

² One certificate issued in 1915-16.

³ There is at the present time no school of commerce. It is hoped that one may be established in the near future, and the committee on education has received a report of the faculty committee appointed to draw up a plan for a college of commerce.

⁴ This university is working toward a department of accounts and finally in its first year, with about three hundred individual students enrolled.

⁵ This university has established a school of commerce which is virtually in its first year, with about three hundred individual students enrolled. Day classes, and a regular 4 years' course. A line between an extension course and practical laboratory work is not clearly marked.

⁶ Tufts College has no school of business. The Braker fund now has \$17,013.68 to its credit and initial steps are being taken toward the formation of a school of this kind.

⁷ Yes. The school operates, with other departments of the college, in a fund of \$300,000.

⁸ Not more than two full courses, first year, averaging 3 hours per week. Not more than five courses, second year, averaging 3 hours per week.

	Wisconsin.	Amos Tuck-Dartmouth (post-graduate.	Harvard (post-graduate).	Cornell.	North Dakota.	University of Oregon.	Tufts.
Number of graduates 1914-15.....	53	17	27				
Number of graduates 1915-16.....	47	24	37				
Number of graduates since establishment.....	490	152	127				
Number of professors, instructors, lecturers and assistants, without duplication.....	40	28	Faculty, 70 lecturers, etc.				
Number of above practising the profession of accountancy.....	3	1	2				
Total number of C. P. A.'s among graduates.....	7	1	Not known.				
Total number of C. P. A.'s among lecturers.....	7	1	1				
Total number of C. P. A.'s among faculty.....	3	None.	None.				

TEACHING ACCOUNTING IN THE COLLEGIATE COURSE OF STUDY FOR BUSINESS.

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In the very limited time allotted to this paper no attempt will be made to enter into a discussion of pedagogical questions as to methods of imparting accounting knowledge. The scope must be limited to the place which accounting and instruction in accounting should occupy in the curricula of universities and colleges. This involves a glance at the reasons for undertaking university instruction in the subject and an inspection of those basic studies and correlative studies giving fullest grasp of the field.

The movement to incorporate instruction specifically preparatory to business life into the curricula of the higher institutions of learning in the United States has been of very recent origin. It dates back less than 20 years. Prior to 1898 only one such institution offered courses in commerce and accounts.

This tardy development of our educational system was due partly to the inertia or conservatism of attitude in educators and partly to the fact that business development in the United States has not progressed far enough to make an insistent demand for men both highly trained and broadly trained to fill the important positions in successful enterprises.

This conservatism of educators has been very proper. Already innumerable subjects overcrowded the curriculum. Time and facilities were not available to teach well what was already established as a necessary part of the work in hand. Every new subject must prove conclusively that it was eminently worth while before an attempt to make room for it could succeed. Every new subject must overcome the antagonism of the already strained energies and resources of our educational institutions.

But the general educational trend has long been toward a liberalizing of education; the field has become broader. All persons could not be made to fit into the same mould, nor could the same educational processes be applied to each and all with good results. Just as the sciences and modern languages have crowded in on the classics and mathematics, so have the more immediately practical subjects crowded into position as soon as they have proven their power to give that stiff mental training which is essential in giving strength of fiber to the finished product of education. And so political science and economics have found a place among the accepted subjects of the present day to be accompanied by accounting, the subject to which this paper is devoted.

It is only recently that business development in the United States has proceeded far enough in the complexity of its forms and the vastness of its extent so that we could say that as a nation we had left primitive conditions far behind us and were facing the problems that go with dense populations in highly organized communities.

It is in this field that we find a fundamental cause for the call for higher education in business. It is in the growth of the size of the business unit.

In the earlier, simpler, and more primitive conditions of American business the unit was small. One man could initiate, organize, and carry to a successful conclusion the average business enterprise. With the rapid industrial growth came the opening up of the field for the larger industrial concern. In many parts of the field large scale production has proven more efficient than small scale enterprise. This growth was attended by many evils, the selfishness of monopoly and the oppression of small competitors.

The call has gone forth for men of broader mental and moral grasp, men trained not only in the expert knowledge of the particular business in hand, but men trained in

a broad understanding of the economic and political constitution of society. Men must not only understand the technical economic processes of their particular business but the economic relationships of that business to the rest of the world. The awakened conscience of the people has called for a stricter accounting of business men from the standpoint of public welfare. This could not be as fully understood by men of apprenticeship training as by men prepared for life work in the broader training of the humanities. And so the demand arose for men trained to a keener sense of social responsibility.

Another factor in the call for higher education in business has come from the entrance of government into the field of production and on a considerable scale. Municipalities have proven successful producers in the field of electric lighting, gas and water supply and even in street railway transportation. While government regulation whether city, State, or Federal, in such fields as railway transportation, banks, insurance, etc., has called for the assumption of business activities and responsibilities second in importance only to full ownership.

Business handled in this way, especially in a democracy, must be managed by a broad intelligence, quickly susceptible to the keen criticism of those interested in public welfare. It also calls for the presentation of business facts in such a way as to make them intelligible to the great mass of the people, as under a democratic form of government these men are, at least ultimately, responsible to the people. Only on the basis of a thorough knowledge of accounting principles by those in positions of responsibility and by a correct presentation of the results of their work to an intelligent public can these government business activities be carried to a successful conclusion. Responsible officials must make simple and correct statements of the results of their work in balance sheets that will convey desired information to an interested public. Only so can municipal governments, municipal utilities, and the great business institutions of a quasi-public nature, such as railroads, banks, and insurance companies, be made to properly fulfill their functions in a democracy. And in this field accounting is absolutely essential.

Many political questions present problems which may need statesmanship equipped with accounting knowledge for their solution. The adjustment of railroad rates so as to make the money cost of the service rendered fit the extent of the economic gain to society from the service rendered calls for the keenest economic analysis of which the accountant is capable, and the solution of this problem is only in its initial stages.

The adjustment of tariff rates calls for accounting knowledge of the business lying back of the production of the goods taxed.

The questions as to monopoly price call for accounting knowledge of the business coming under such regulation.

These various demands just enumerated, calling for men equipped with accounting knowledge and ready to take up large business responsibilities, have been borne in upon the university communities of our country very insistently for nearly two decades. And the demand, when it has been rightly understood, has met with a ready and hearty response.

To the University of Pennsylvania school, pioneer in the field, established in 1881, were added those of the University of Chicago and the University of California in 1898. In 1900 the University of Wisconsin and Dartmouth College established schools of commerce. In 1901 the Universities of New York and Vermont followed. In 1902 the University of Illinois organized its work of education preparatory to a business career. By 1910 Harvard, Columbia, Northwestern, Michigan, Pittsburgh, St. Louis, and others had become equipped for this part of the educational field.

To-day there is scarcely an institution of higher rank that does not give instruction in accounting and allied subjects, either in a separate school or department of commerce and business administration or as a course within the already established departments of economics or political science.

An examination into the nature of accounting will enable us to locate it as a subject for instruction in institutions of university or collegiate rank.

The work of the accountant at first glance seems to consist of the making of records of business transactions, the organization of these records into a system, and making of reports of various kinds showing the results of the business activities as evidenced by the system of records. This is the technical side of the work of the accountant. This technical work can be to a very large degree relegated to the hands of trained assistants. The vital, essential part of the accountant's work, the part we might call the real test of the accounting, comes in the application of the principles of valuation—i. e., of economic principles to the making of these business records. All business transactions, all business activities, are to be based on values involved in goods and services. All transactions or activities have an aim or purpose in affecting these values with respect to the business—i. e., for the benefit or the profit of the business.

It is in an understanding of these values and an understanding of all the various forces at work affecting them that we find the real work of the accountant. The intricate changes ensuing from the play of these economic forces must be made a matter of record and incorporated into the business history just as they occur. The economic significance of each business transaction is vital to its accounting.

The whole system of the incorporation of the values of land, labor, capital, and enterprise into the business, the interplay of these forces, their effect upon the aim or purpose of the business—i. e., its profit or economic advancement—must be understood and applied in successful accounting.

Further, the economic environment of this particular business, its relation to the market and to the world at large, the various forces that can affect it, must be understood—and not only its place in the economic organization of society, of which it is an integral part, but its relationships to the social and political organizations of the community. It is in the failure to know or realize this that we find the largest shortcomings of business management and accounting.

The importance of double-entry bookkeeping to accounting has often caused in the lay mind a confusion of double-entry bookkeeping and accounting, the confusion of the means or method with the real work. Double-entry bookkeeping and accounting are not synonymous.

Accounting has taken place with no making of records whatever, and may yet in exceedingly simple situations. The first accounting device was probably the notched stick, split in half, with each party to the transaction in possession of a half. Later single entry was used very extensively as the basis of accounting, and it is yet, quite properly, within a certain field. The origination of double-entry bookkeeping, a still higher development, was probably the most important discovery ever made in the accounting field. It has become an invaluable aid in securing the mechanical accuracy of the recording of business transactions. But these are, after all, means, devices, or methods, and it is not inconceivable that higher and more accurate means and methods await us in the future development of the accounting field with the application of principles of higher mathematics and with superior methods in business organization becoming prevalent.

Whatever the devices or methods used the vital work of the accountant must always remain the work of making manifest the changes in valuation due to business activities. He must state the conclusion of the business processes in the light of the values incorporated into the business, must show forth the changes that are taking place and the results of those changes. Double-entry bookkeeping alone or any of the mechanical devices alone can not do this. For such knowledge we must seek further, turning to the principles of economics, which constitute the real foundation for the work of the accountant.

The study of accounting, then, in the collegiate curriculum should come after a thorough foundation in the principles of economic theory and the studies dealing

with the social organization of economic forces, or at least it should be thoroughly coordinated with these studies.

The elements of economic theory should be followed by more advanced work in value and distribution. Then the application of economic principles to such subjects as banking, transportation, labor and immigration, finance, capitalization, investments, insurance, and industrial history.

Coordinating the instruction in accounting with these subjects there should come, first, the study of simple problems, business forms, and the technique of bookkeeping, followed by a study of business organization and administration. Then may come the work on organization of accounting systems to meet the needs of particular kinds of business and the study of accounting principles in valuation and the making of reports, the work to be concluded by such specialized subjects as auditing, cost accounting, and accounting in particular fields.

Legal knowledge also is necessary to a full comprehension of business and to the execution of business transactions in their relation to the rest of the social organization. A large part of law is the expression of human experience in adjusting equitably these relationships. To secure an accurate and efficient recording of the activities of the business the accountant must be acquainted with business law. The study of this part of the accountant's equipment can be coordinated with the work above mentioned.

From the preceding we may infer that the study of the technical material of accounting is of lesser importance in the collegiate or university instruction applied to the subject. Technical means or methods in the handling of accounting records are infinite in variety, and they vary with growth and development of the business and changes in environment. A study of all the important technical devices is necessary, but it is incidental to the study of accounting principles and problems. The infinite variations can and should be worked out in practice later.

The aim all through should be to give knowledge of underlying principles and the capacity to meet comprehendingly a new problem, to teach men to think in the affairs of their profession, in fact to turn their business into a profession.

The CHAIRMAN. I assume, indeed, that while at this meeting the general subject is "The teaching of special subjects in the collegiate course of study for business, domestic and foreign," as this is a Pan American conference, we should discuss, at least to some extent, and put some emphasis upon the subject of "Teaching for foreign trade." Business courses are given for the benefit of business people. The average textbook or course in industrial and commercial geography is very deficient in matters of prime importance to the trade. The average textbook on this subject treats mainly of raw materials and pays very little attention to manufactured goods, a great factor in commerce. Now raw materials, such as wheat, iron, cotton, etc., are very important and bulk large in the world's commerce, but they do not have the difficulties of trade promotion or trade competition, as do the commercial products dealt with and offered by the manufacturer. Raw materials generally flow very freely to the locality where they are needed, and with very little trouble or expense. The trade learns about them very quickly. But that is not true of manufactured goods which may require for their introduction a great deal of study of local conditions.

I believe there is very great need for textbooks that will treat to a very large extent of manufactured goods. I should think the compilation of such a book might be made in association with a man who is in business, who has some line of general trade which makes him familiar with various kinds of machinery, a man who knows the conditions under which they are made and the conditions under which they are to be sold. I would like to have Dean Raper say a few words in regard to the teaching of languages in commercial courses, since Dr. Swiggett has been prevented by illness from attending the session to-day.

MR. RAPER. Mr. Chairman, I know very little about the subject except in a general way. I know of two or three institutions in the South that are now making an effort to place as much emphasis on the practical side of Spanish as upon the cultural side, but this effort has been under way only two or three years. I think, however, it has succeeded pretty well. Two or three men at our institution recently specialized on the practical side of Spanish. Two or three men of the University of Tennessee have done the same thing. As to the method of doing it I do not know. I understand that Dr. Swiggett, of the University of Tennessee, has made a point of giving all of his courses in Spanish with the view of learning all the practical words in Spanish, such as the reading of Spanish reports and Spanish newspapers, particularly dealing with the practical side of business life. Outside of that I have no experience.

THE CHAIRMAN. That seems a very good point which Dean Raper has made. The teaching of a language by commercial usage will emphasize the speaking of the language. An attempt should be made therefore to employ a vocabulary such as is ordinarily employed in business. There are, I suppose, idioms of business just as there are idioms in the professions, etc. That seems to me a very practical point. Prof. Lough, what have you to say?

MR. LOUGH. An attempt was made in the extra-mural division of the University of New York City to teach commercial Spanish. We had a man who knows Spanish a great deal better than he knows English to conduct the course. There is practically no translating. The men are taught to think in terms of Spanish activities instead of translating into English.

THE CHAIRMAN. That would seem a good idea, but let me ask you how does this instructor who, as I understand it, understands very little English, know what the points of difficulty are which stand in the way of the American who is seeking to learn Spanish? How does he express himself clearly? How is he able to arrange his course? I suppose it is more in the method of teaching—to present the matter in the order it would appeal to the men.

Mr. LOUGH. That is a difficult thing in the teaching of languages at all times. I think he simply takes the topics which lend themselves rather easily to the method of expression. He tries to bring the students into direct communication with the men, especially in the Central American countries, by having them write—he has arranged for the students in our classes to correspond with the consular offices—to the men in Central America, writing in Spanish, and the men down there writing in English.

Mr. STANLEY ROSE. While I am not a college man I would like to say a word. I have always been a firm advocate of learning foreign languages—have always been exceedingly interested in them. I have found a growing interest in learning languages for commercial purposes, and especially by commercial organizations. For instance, I was present at St. Louis at the Business Men's League and had the opportunity of meeting all the Spanish classes, young women and men learning Spanish from a Spanish instructor. I have also been at the University of Ohio at Columbus, where they are also making an effort to teach commercial Spanish. I found that a good many of these students have studied Spanish for years and are unable to say the simplest things even in ordinary conversation. I think the commercial part can only be taken up through a native teacher. It is most difficult to get Americans, who speak only English, to give the correct intonation. It is almost an impossible thing. I think this is particularly so in French.

The CHAIRMAN. You are putting the emphasis on the conversational side of the work.

Mr. ROSE. Yes. If you have to translate a Spanish scientific work I think the grammar is more important always. We have the greatest difficulty in our bureau to get men otherwise qualified to send down to South and Central America who are able to converse in Spanish. When a man calls on a local importer and wants to get data for our bureau the most important thing is of course that he can converse.

Mr. HICKS. I do not speak on this subject from the standpoint of a teacher of modern languages but as one who is laboring hard to so construct the course in modern languages in our colleges and commercial schools that it may be of real use. I have just two suggestions to offer, perhaps three. First, in respect to grammar, I think the student, whether preparing for literature or for commerce, should be taught only so much grammar as he needs to use and should be taught it as he needs to use it and not be made to acquire a lot of grammatical rules that are of use only in translating some obscure and antique piece of literature. I studied the modern languages and learned to thumb a dictionary. I was able to translate with difficulty, and only after several years spent in

one of our best educational institutions. Then I went at it in a different way. I was impressed with the fact that there is a mistake made in treating our grown-ups in the study of languages as if they were grown-ups. I think we should begin as though they were children and then make them patiently proceed for a considerable time as children. We should accomplish much more. I base that on an experience I had with a Berlitz School teacher.

The CHAIRMAN. Is there anyone else who wishes to speak on this subject of languages?

Mr. REEVES. May I say one word? I think that our teachers in colleges and universities need an outlook broader than that of the immediate geographic field. It occurs to me to inquire whether or not the commercial colleges generally in this country make any requirements whatever in which foreign languages are included for admission. I do not know about that. My impression, gained from two schools, is that they do not. Our colleges have fallen away from the initial requirement of Greek and Latin for admission and now permit in many places students to take a degree without any knowledge in language whatever except English. I may say that it is all right and highly proper. It is perhaps so from the language point of view, but after all a man who knows no language other than his own is provincial, it doesn't make any difference how many degrees he can tack onto his name. If he can not get in touch with any person except one who reads and writes English, that man is not, after all, an educated man.

Now I found it was this way with my graduate students. I have men who expect to go on and teach, take a Ph. D. degree even in international law. They have been allowed to go through the preparatory school and through college; and in their senior year or after they have taken a degree and spent a year in post graduate study they find they do not know any foreign languages. I think that is a most deplorable thing. There is not another country in the world where early training is not given in foreign languages except Great Britain and the United States. In conversation the last week with men from Latin America I have been humiliated to find that these men have received a training in English. One is humiliated when he finds so many delegates from Latin America speaking excellent English and who know that we can only speak to them in English when they come here.

Mr. SWANSON. I feel it necessary in deference to schools of commerce to challenge the statement of the last speaker. I appreciate fully that even if students had considerable training in foreign languages for professional purposes, they would still be able to speak these languages but poorly. I know of three instances in the larger schools of commerce where it is required that a student have two

years of the ancient languages, or two years of modern languages. In the school of commerce that I represent we require not only two years of either foreign or ancient languages in the high school, but also two years of foreign languages in college as preparatory to commerce. I think on the whole the attitude throughout the country is clearly in favor of a training in the foreign languages. My only question is the practicability of so much training, especially in our inland cities. I find the university is really in advance of the demand. In our evening course the demand for Spanish has increased so that the classes which used to have four or five students now have 30 and 40. The difficulty is for these students to find the business house that can utilize them.

The CHAIRMAN. Let me present this thought from the point of view of a business man in reference to the teaching of geography, history, and government in business courses. In the teaching of languages we have had the point emphasized of using the practical method to secure practical results. In geography we should make the point that we need to emphasize the distribution of manufactured goods as a factor in commerce more than has hitherto been done, and particularly, of course, when you are teaching geography for the use of the trader who is exporting goods. The trader should also know enough history of the country in which he is selling his goods to be able to account for some of the traditions and customs which seem so peculiar to us, but every one of which we find some explanation for in the life and in the history of the people, and it seems to me that they will help the trader to account for the difference in psychology of the people in foreign parts.

Mr. LOUGH. History is one form of psychology, you know.

The CHAIRMAN. That is very good and applies also when you speak of teaching government, business law, etc., for the uses of the trader, the practical uses of the trader. We think at once how necessary it is for the trader to know something about commercial law relating to foreign business. For instance, take China. There is a treaty between this country and China which has been in effect for some time, and which is intended to do away with the matter of interior customs. But actually no such thing as that happened. You still have these customs which the trader needs to know about, as well as a great number of laws, special laws, in these different countries. There are regulations in regard to such simple matters as the fee which the commercial traveler must pay for entering a country, in some cases determining his length of stay, and all that sort of thing. The trader might be taught all these customs and regulations and laws which it seems could be presented in these courses, and which would give to him some very practical help. Some of these things do not seem to be precisely a part of

geography, or a part of history, yet all of these matters could be given in such courses. For instance, it seems much more important that a trader who is selling to China should know the system of selling goods to a comprador, than to know some of the principal ports of Southern, Central, and Northern China. He will find these out for himself very quickly. But the trader is apt to send a man to China uninstructed, or apt to go himself on an important mission, and be entirely ignorant of the most important matters.

I fancy that these matters can be summarized in a course in connection with a course of commercial law and industrial and commercial geography, but I want to emphasize here on the part of the business people that there is a demand for this preliminary course. It seems to me, then, that in this respect the teaching of languages and geography, history and government, for the uses of the trader is an entirely different proposition from ordinary teaching of these subjects for their cultural value as ordinarily given in the usual academic college course. For instance, take government: Our traders must know some of the elements of the political government and history of the country in which they trade and carry on their operations. But what is of more practical value to him is to know whether the government is managing its own railroads or not; and if so, whether these railroads have their own shops and make their own engines, or purchase from other countries; and if so, what the gauge of the railroad is, and all that sort of thing. It is very important to the trader to know whether the harbors of these foreign countries are managed by harbor boards or trusts under government control, as South Sydney, Wellington, and Auckland, or whether they are managed by an entire board for the entire coast as at Adelaide, South Australia, or whether the harbors are managed higglety-pigglety fashion by each person who happens to have a piece of shore property, running it to suit himself. In other words, if you have your harbors under harbor boards for the control of the entire littoral, there is considerable business to be done, considerable goods to be sold. These are the phases of the situation which it is necessary for the trader to know. The more we know about it the better. We do not have time enough to put into these college courses all the things which ought to be taught. You can not altogether look down upon that phase of commercial training, because, after all, commerce is for the purposes and uses of the trader. Is not that so? Then the more practical you can make it the better. After you have taken up the most practical features of it, then you can extend it into some broad, cultural course which will give the history of trading from the time of nations down to the hour of selling the goods.

Mr. RAPER. In the Columbus, Georgia, high school, where they are interested in the manufacture of cotton largely, the superintendent of schools addressed himself to the teaching of geography so that it would be of benefit to the students. He equipped a room in the high school known as the geography room. In that room they have all the products that are grown around Columbus, and what they produce in the surrounding country. And in that room they have the products of countries to which Columbus ships and sells. I am informed that as a result of such a room the people of Columbus are in touch with the outside world, and the outside world is in touch with them. Consequently the geography that they get is very practical. The boy who grows up in Columbus and goes to this high school and who decides to spend his life and go into business in Columbus becomes interested in this geography, not in the abstract, but as a perfectly practical thing, for he himself will later on be producing these goods and exchanging with China, South America, and so on. It seems to me that in college instruction something like that might be carried to a still further degree.

The CHAIRMAN. Another matter occurs to me that might perhaps be emphasized here. The German Government some years ago sent to Peking a man who was familiar with industrial art. He made a very thorough study of the history of art, art motifs, etc., used in China, took drawings of them, and all that sort of thing, and sent these drawings and papers back to Germany, where the manufacturers' association had its center. In the production of a number of things, such as wall paper, and various kinds of cloths, they began at once to copy these Chinese designs, to work these Chinese motifs into the products, and in that way were extremely successful in disposing of their goods.

I want to come back to Dean Raper's address. He has touched upon a great many phases of the subject. Have any delegates any questions to ask in connection with the subject of banking?

Mr. HOWARD. How much time should be given to such a course?

Mr. RAPER. I think that a three-hour course for the year is about the minimum that makes it practicable. That, however, may be taking more time than the college can grant. I have attempted to cover in five months, with three hours a week, the more general principles, and I find that we can quite safely get some practical application out of that.

Mr. HOWARD. Is the course in money necessary?

Mr. RAPER. I was asked specifically to discuss a course on banking and finance. The course in money should come before that. I think it is absolutely necessary that it be treated as practically as possible, but should come before the course on banking and finance. It would seem a three-hour course for one year would be absolutely necessary.

Miss MACY. I was not here at the beginning of the gentleman's paper, but I should like to ask if anything has been done to develop a course in finance in reference to high-school girls. It seems to me that is necessary in view of the fact that life-insurance companies have found, after a careful investigation, that within a few years, I believe it is seven years after the death of the rank and file of the insured in this country, that only 5 per cent of the families have any money left. It seems to me we have a great need of a course of finance for high-school girls as well as for boys.

Mr. RAPER. So far as I know very little has been done to develop that side of the question. I have been frank enough to believe that a very simple elementary course in banking and finance should go into the curriculum for boys as well as for girls. I think I would sacrifice some things in order to teach a point of view on some of the facts and principles of money, banking, and finance to every high-school pupil.

Miss MACY. I have nothing further to say except this, that I think the financial bureaus now in existence could very properly be approached by the universities interested in this movement. I tried to have a course of lectures given in my own high school. I sent to Mr. Babson to send an expert. The man came and advised my students that the only safe investment was railroad bonds. I was compelled to advise them as to the realty investments, something nearer home; to have them informed on mortgages and first-class realty in their own neighborhoods, where the student could see it and know the value of it. I think there is where it would fit in with domestic science, and that there is a splendid field for it. We ought to teach women the value of money, and how it is distributed, a thing which she needs to know, as the men work hard enough to make it.

The CHAIRMAN. Has any delegate any question to ask of Prof. Lough? Or any statement to make with reference to his topic?

Mr. RAPER. Within the last two or three years I have been called upon to be one arbitrator among others in business cases. They were very complicated, and very interesting. I found in one of these cases a man who believed in the old type of ethics as almost no one else I know of. During the course of the arbitration we were given an opportunity to look far back of the curtain, and his record in a business way was not good. He was a great believer in a formal type of ethics and didn't think he had done anything at all wrong according to his own standard, but a strict interpretation of his actions made him a dishonest man.

Mr. LOUGH. I have found the same thing in business ethics. A man who would do certain things and take the attitude that it was not stealing, would do it under a process of mental evolution which he believed was right. I have wondered what his mind is, what kind

of a conscience he has. He might be a perfectly safe man to trust with the silver, and yet he had not come to a realization that in a business operation where he took money from other people by devious methods within the law, and sometimes without the law, he was actually stealing the money. It is the awakening of that conscience, not as an individual, but in its corporate capacity that I have included here in my discussion of ethics. The whole subject should be taught, of course. I can think of many illustrations of this kind. I do not think we can make men good by having them memorize golden texts, such as "Honesty is the best policy," or any of these methods, including the memorizing of a definite set of rules, and then when it comes to an application of these rules in business operations to let them do something else. It is a difference in moral obliquity. And that is the very thing I would teach.

Mr. SWANSON. Pardon me for taking the floor again. We do not believe in going into a course of business ethics at the Northwestern University, for the reason that we want to avoid the artificial character of ethical training. We try instead to teach ethics for their indirect effect, by having all instruction approach from the social as well as from the individual point of view. When beginning a course in business the psychology of the law is taught by a man whose point of view is private and social. Then the subject matter is presented in such a way that all the social aspects of the subject are instilled into the man as well as the private and inquisitorial aspect. I am profoundly impressed with the practicability of that method of teaching ethics. When a thing occurs he can reason it out instead of trying to apply some set rule in psychology. I wanted to present that as one way in which the whole field can be covered, because business ethics of the newer kind is really a recognition on the part of the individual business man of social responsibilities, as well as individual and private responsibilities.

The CHAIRMAN. Prof. Swanson reminds me that I want to say just a word in regard to his paper. I merely want to point out that in dealing with commercial students, the masses of them, you have very little time in which to impart instruction, and you have very little disposition on the part of the pupils to receive it unless you give them something that is practical. I mean by that something which enables them to get down to work more quickly and something which improves their financial status; in other words, something to help them to make money, to succeed in a business way. I believe with Prof. Swanson that everything taught of a practical nature has at the same time a cultural value. Of course this is so. But I wish to emphasize the fact that it is absolutely essential to buckle right down to the most necessary and most practical elements in these courses of study when giving them to

business people for industrial and commercial uses. Take industrial education, for instance: 95 per cent of the people who get any industrial training get it in supplementary courses, in night courses, or part-time courses. The same thing is holding good for the most part in commercial training. They can not give all of their time to the subject, but they are willing to work hard for the acquisition of such supplementary courses, if by that hard work they can get something practical out of it. I think all of your training in colleges might be highly practical. You are forced, it seems to me, to pay some attention to that demand.

Mr. SWANSON. We have 900 pupils enrolled in our evening schools. Mr. Hicks has a large number in his. They are all business men. I fear you are overemphasizing this quick method. I really never had an appreciation of culture and theory until I met the demand of the actual business man. He requires it to be successful in business of one kind as well as another. He requires a knowledge of economics of human nature, which is psychology, so many factors that have been eliminated in a short and crowded scheme of education. We have of these 900 students over 300 studying economics, and 100 studying psychology. The bigger the business man and the more successful he is, the greater his demand for fundamental study and for information, because after all it is going to be a long time before the college will be able to give a man as much information as he can get in business. I am not sure we ought to go very far along the information lines; just far enough to be able to give students a true conception of the significance of the fundamentals for economics, accounting, psychology, law, and all these fields. My experience with the business man has been just what I tried to say, that in going into these subjects we should deal with the facts of life as they will have to deal with them, to give them the big point of view.

The CHAIRMAN. I grant that these are high ideals. There is no question about that. It merely amounts to saying this, for a man to succeed in business he must have the broadest training beforehand. But we have to face the fact in this country that the great mass of the people who are to go into the industrial fields do not get any training at all, because the money is being spent on a very broad and very expensive type of instruction. You are neglecting altogether the practical requirements of the man who is not going to have more than a few hours a week to get any such instruction. You are not providing for it. In a measure that same thing applies to commercial education. These supplementary courses, attended by the man in business who is very anxious to get some additional training, must be of a very practical character, and he really won't take any interest unless they are of that character. It is quite a

strain to attend any course in addition to business, perhaps a strain to provide the fee even. Men only go into it because they want something practical. You are not meeting the demand on the part of the people unless it is practical.

Mr. Hicks. It has seemed to me that we get lost in terms when we get to talking about this important difference in the cultural and the practical. I do not approach the subject from that standpoint. I think Mr. Swanson means by cultural teaching all the fundamental principles that underlie activity as compared with teaching the mere doing of a particular thing. I do not think there is any question about our field of work, and I do not believe from that standpoint there would be a dissenting voice on the part of the man in business. For instance, the man in business, if he were given the opportunity to hire two persons of otherwise equal capacity, one who had a well-trained mind and a thorough grasp upon fundamental principles, and one who had learned to do a particular thing well but without an understanding of why, without having trained his mind so that when that particular thing was no longer wanted he would have to adapt himself to something else, I think the man would choose the one who had been taught to apply technical principles to his work. But we do try to emphasize what I think our chairman means by the practical standpoint, and for that matter I have disregarded any teaching of fundamental economics after something over 25 years' experience; I have disregarded that old method that started out "Economics treats of so and so, and the fundamental concepts are so and so," and have gotten down to an effort to teach courses to the end that they will aid in the doing of things and in an understanding of the actual conditions of life. That is what I understand by the practical. And I believe our field in higher commercial education is to teach principles, and to teach them, not as we might evolve them as a matter of mental gymnastics in our studies, but as actually applied to and extending to business activities.

Adjournment.

JOINT SESSION OF SUBSECTIONS 1, 3, AND 5 OF SECTION IV.

NEW WILLARD HOTEL,
Monday afternoon, January 3, 1916.

Chairman, FREDERICK P. KEPPEL.

The session was called to order at 2.30 o'clock by the chairman.

The CHAIRMAN. Ladies and gentlemen, President Butler, who was to have presided to-day, was unfortunately detained in New York by an engagement in connection with his duties at Columbia University, and he has asked me to act as presiding officer of this meeting. Among the speakers is my colleague, Prof. John Bassett Moore, of Columbia University. We will now have the pleasure of hearing his paper.

THE ORGANIZATION AND DEVELOPMENT OF A PLAN FOR THE SYSTEMATIC EXCHANGE OF UNIVERSITY STUDENTS AND UNIVERSITY PROFESSORS BETWEEN THE SEVERAL AMERICAN REPUBLICS.

By JOHN BASSETT MOORE,

Columbia University, New York City.

By a resolution adopted on August 18, 1910, the Fourth International American Conference at Buenos Aires decided to recommend to the American Governments a plan for the interchange of professors and students.

As to professors, it was recommended that facilities should be granted to those sent from one university to another "for the holding of classes or the giving of lectures." Such classes or lectures, it was advised, should "treat chiefly of scientific matters of interest to America, or relating to the conditions of one or more of the American countries, especially that in which the professor is teaching." To this end, it was resolved that in each year the universities desiring the interchange should give notice to each other of the matters of which their professors could treat and of those which they desired to have treated. The remuneration of the professor was to be paid by the university which had appointed him, unless his services should have been expressly requested, in which case his compensation was to be paid by the university making the request. It was further resolved that the universities should determine annually the amount to be taken from their own funds or to be requested from their respective governments, for meeting the cost of carrying out the resolution. It was further declared to be desirable that the universities of America should attempt at a congress to provide for university extension and other means of American university cooperation.

As to students, it was resolved that the universities should create scholarships in favor of students of other countries of the continent, with or without reciprocity, and that each university in which such scholarships should have been created should appoint a committee to be charged with the care of the students to whom scholarships

had been given, with a view to direct their studies and regulate the performance of their duties.

Such was the resolution. Its evident object was to make helpful suggestions toward the accomplishment of a design which, if we may judge by the usual discussions of it, is assumed to be as easy of fulfillment as it is no doubt benevolent in intention. The fact must, however, be admitted, that those discussions take little or no account either of experience or of the inherent difficulties of the subject.

Certainly the time has come, when, instead of making vague assumptions, we should examine the problem at close quarters and endeavor to understand it. In this spirit I will consider, first, the question of the exchange of professors.

When I speak of the exchange of professors, I of course refer to a systematic exchange, annually or at frequent or stated intervals, necessitating a regular and constant supply of properly equipped men. If the exchange is to be simply occasional, it would be idle now to discuss it, since it will take place only when special provision is made for it and on the terms then specified.

Dealing with the question as one of systematic exchange, I hazard nothing in saying that the results of such an exchange of professors, where it has actually been tried, have not by any means been uniform. While in some cases the results have been manifestly valuable, their value has in other cases been less appreciable. And this difference has been due not solely to differences in general teaching efficiency and linguistic equipment, but also to differences in the adaptation of the subject to the educational scheme and needs of the particular institution. In the last analysis, however, the conclusion perhaps can not be avoided that a main cause of the difference in results has been the impossibility of obtaining a constant supply of persons possessing the requisite linguistic equipment, the absence of which may be a bar to effective instruction, while the effort to obtain it narrows the field of selection and may defeat the object of the exchange.

If I correctly apprehended it, the underlying purpose of the systematic exchange of professors is the interpretation, in a broad sense, of the history, institutions, and ideals of one people to another people, to the end that they may know each other better, and, profiting by each other's experience and achievements, learn to work together in sympathy and mutual understanding for the common good.

Such being the object to be attained, may we not ask, whether, in essaying to reach it by the mere exchange of professors, we are not proposing a means inadequate to the accomplishment of the end in view? And when I say "inadequate," I mean actually so; for, after all, the question is a practical one. With modern facilities of transportation, international travel has so increased that there is no civilized country in which the presence of a foreigner, though he be a professor, is an event so rare as to attract a throng even of university students. The fact is also to be borne in mind that university students have regular courses of study to pursue, that for the most part they are laboring toward specific results, and that their prescribed work to a great extent engrosses their thoughts and monopolizes their time and energies, so that instruction, if it is to be effectively given, must fit in with their plan of study and form a part of it. Otherwise their regular attendance upon lectures is hardly to be counted on.

The first and logical step in the scheme of interpretation would therefore appear to be to establish, in the university in which the work is to be undertaken, a chair devoted to the comprehensive exposition of the history, institutions and ideals of the people or group of peoples whose life it is proposed especially to explain. This chair should be permanently filled, by an incumbent who could speak the language of the people or group in question as well as that of the country in which the university is situated, and the work should form a part of the regular curriculum. In this way permanence of instruction would be assured, and if at any time an advantageous exchange could be arranged, a salary would be already provided for the temporary

incumbent. Meanwhile, the exchange would be merely an incident of the work and not the controlling factor.

I have already adverted to the uncertainties of the exchange system, as usually discussed, due to the linguistic difficulties. The effort to meet this important practical condition, while narrowing the field of selection, also makes the subject to be taught a matter of uncertainty. The subject which a person linguistically qualified might be able to offer might bear no relation whatever to the fundamental thought of the system; but even if it should have some such relation, it might be a subject not only adequately taught in the institution to which the exchange professor comes but taught in conformity with a plan of instruction with which he is unfamiliar. But there is still another difficulty and a very serious one. It may regularly happen that a professor who, by reason of his exceptional fitness and prestige is specially desired, may be engaged in important work which he cannot be fairly asked to abandon or suspend. Perhaps his personal situation may be such that he is unable to absent himself from his home. Indeed, do we transcend the bounds of admissible conjecture if we permit ourselves to suppose that by reason of a combination of circumstances the services he is at the moment rendering at home may be of greater value than any he could just then perform elsewhere.

In suggesting, as the first step in the effective solution of the problem, the establishment of special chairs, it may be unnecessary to remark that I have not overlooked the fact that in various universities more or less instruction is already given in the literature and the political and social institutions of foreign countries; but it is often given in detached courses and without the definite design of presenting a comprehensive survey and interpretation of the civilization of a particular people or group, which I take to be the main conception of the proposed exchange. The student-attendance which such a chair would command, would, as in all other cases, depend in an appreciable measure upon the efficiency of the incumbent, and, as has already been intimated, an additional attraction could now and then be offered in the person of an exchange professor, when an available one could be found.

As to the exchange of students little need be said on the present occasion. The recommendation made at the fourth International American Conference does not seem to require extended additions or comment. There is, however, one point which it would be well to bear in mind, for further consideration, and that is the question of the age of the students to be exchanged. Not long ago in presenting this question to a number of foreign students of different nationalities, I was struck with the fact that they all seemed to concur in the opinion that it was undesirable to send youths away from home at such an early age that, receiving their formative impressions abroad, they would return to their native land as strangers in a strange environment, with the result that they would be unable to work in harmony and cooperation with their own people and would even find their ability to make a living seriously impaired.

The CHAIRMAN. We are all very much obliged to Prof. Moore for having addressed us. We shall next have the pleasure of hearing Prof. Garay.

EN CAMINO HACIA LA UNIVERSIDAD PANAMERICANA.

Por NARCISO GARAY,

Miembro del Consejo Técnico de Instrucción Pública de la República de Panamá.

Invitado hace pocas semanas por la Dotación Carnegie para asistir a las sesiones de este Congreso, y designado con ese motivo por el Gobierno de mi patria para repre-

sentar a ésta en la Sección de Educación y Enseñanza, he querido corresponder a tales honores dando a conocer en este trabajo: (1) Los ensayos hechos y la labor realizada por la República de Panamá en materia de enseñanza primaria, secundaria, comercial, industrial, artística y profesional; (2) sus legítimas esperanzas en materia de enseñanza superior o universitaria.

Los datos aquí recogidos fueron en cierto modo solicitados por los organizadores del Congreso al escribir en su Programa Preliminar que "la experiencia de un país interesa muchísimo a los otros," y al formular allí mismo cierto número de preguntas o temas en relación con los cuales refiero a continuación las prácticas adoptadas por mi país en once años de vida independiente.

Este simple relato, bien se comprende, no puede incluir consideraciones doctrinarias ni opiniones personales que sólo cabrían en él si su autor lo hubiera sido a la vez de todas las medidas tomadas en el ramo de Instrucción Pública por la República de Panamá; pero su influencia sobre tales medidas ha sido tan insignificante, no obstante su condición de miembro del Consejo Técnico de Instrucción Pública, que esa feliz circunstancia le permite conservar en esta ocasión la actitud de un relator fiel y desapasionado.

ENSEÑANZA PRIMARIA.

1. ¿En qué proporción debería sostenerse la instrucción elemental por impuestos locales y en cuál por impuestos del Estado? ¿Cuáles deberían ser los factores determinantes en dicha distribución? (Programa Preliminar del Segundo Congreso Científico Panamericano, pag. 18).

A poco de haber sido proclamada la República de Panamá el 3 de noviembre de 1903, la Convención Nacional Constituyente dictó la ley 11 de 1904, orgánica de la Instrucción Pública, que comienza así:

ARTÍCULO 1. La dirección y el fomento de la instrucción pública en todos sus ramos corresponde al Gobierno Nacional. Esto no obsta para que los municipios que dispongan de recursos suficientes sostengan establecimientos de enseñanza, siempre que se sometan a las disposiciones y reglamentos que dicte el Poder Ejecutivo y a la inspección de éste.

El artículo 58 agrega:

Los gastos que ocasione la instrucción pública en la Nación tienen prelación a cualesquiera otros. El Gobierno los reglamentará y pagará con rigurosa exactitud, de acuerdo con el espíritu de esta disposición.

El artículo 59 dice: "Es deber de los municipios la formación del censo escolar."

Seis años después, la Asamblea Nacional, por medio de la ley 45 de 1910, determinó la forma concreta en que los municipios debían cooperar al sostenimiento de la instrucción pública, así:

ART. 20. Son de cargo de la Nación todos los gastos de Instrucción Pública primaria, así de personal como de material, con excepción de la provisión de útiles de escritorio para las inspecciones locales, la de vestidos para los niños indigentes que concurren a las escuelas públicas, exámenes y certámenes de las mismas, provisión de luz y agua, aseo de las escuelas, conservación y reparación de los muebles escolares.

Todos los municipios destinarán hasta el 10 por ciento de sus rentas para atender a estos últimos gastos, los cuales serán pagados de preferencia a cualesquiera otros mediante cuentas visadas por los Inspectores Provinciales. * * * y por los inspectores locales.

Tres años después, la ley 31 de 1913 dividía el territorio de la República, para los efectos de la enseñanza pública, en circunscripciones o distritos escolares, así:

ART. 2. * * * en cada distrito escolar habrá un inspector escolar de distrito * * * y sus funciones serán las siguientes: * * * vigilar y atender la construcción y reparación de locales y muebles para escuelas y la inversión justa del 10 por ciento con que los municipios deben auxiliar a la instrucción pública.

Por último, la ley 34 de 1915, dice a este respecto:

ART. 29. Los municipios de Panamá, Colón y Bocas del Toro contribuirán precisamente con el 10 por ciento de sus rentas para los gastos que sean de su cargo en el ramo de instrucción pública. Los demás municipios contribuirán con una suma no menor de 3 por ciento ni mayor de 10 por ciento. Dichos gastos tendrán prelación sobre cualesquiera otros, y si después de efectuados quedase algún saldo a favor de la instrucción pública, podrá éste ser destinado inmediatamente o depositado con el fin de poder atender a la construcción de locales para escuelas o reparación de las existentes.

ART. 31. Los municipios cuyos rentas sean holgadas pueden destinar más de la suma establecida para gastos de instrucción pública, sin que la inversión del exceso pueda ser objetada, salvo el caso de que ella contravenga disposiciones terminantes o sea claramente perjudicial para la enseñanza pública.

De las disposiciones legales arriba transcritas se infiere que la enseñanza primaria en la República de Panamá es costeada por el Gobierno Nacional, y que los municipios contribuyen con sumas que fluctúan entre el 3 y el 10 por ciento de sus rentas, en proporción de su capacidad económica.

2. ¿Cuáles son los elementos esenciales de una ley efectiva sobre asistencia obligatoria en las escuelas? (Programa Preliminar del Segundo Congreso Científico Panamericano, pag. 19).

Las medidas adoptadas a este respecto por los legisladores y gobernantes de Panamá son las siguientes:

La ley 11 de 1904 dispone:

ART. 19. Es obligatorio para todo padre o jefe de familia domiciliado en el país, la inscripción de sus hijos o pupilos cuya edad no baje de siete años ni pase de quince, en la escuela pública o privada más cercana al lugar de su residencia, siempre que no diste más de dos kilómetros.

Tres años más tarde se expide la ley 32 de 1907, que dice:

ART. 3. Es obligatorio para todo padre o jefe de familia que tenga hijos o pupilos matriculados en alguna escuela pública o privada, hacerlos asistir diariamente, bajo la pena de multa de B. 0.25 por cada día que deje de mandarlos sin excusa legítima, y de B. 5.00 por cada falta a los exámenes o actos públicos.

Los padres, guardadores o patrones que no cumplan con la obligación de matricular sus hijos, pupilos o sirvientes en alguna escuela para que reciban la instrucción primaria elemental, sufrirán una multa de B. 0.25 diarios.

Tres años después, el Presidente de la República, por órgano de la Secretaría de Instrucción Pública, dictó el decreto No. 2 de 1910, que contiene estas importantes disposiciones:

ART. 13. La primera autoridad política de cada distrito, corregimiento o regiduría, auxiliada por los agentes de policía a sus órdenes, delegados para ese efecto por el Poder Ejecutivo, levantará cada año, un mes antes de abrirse la escuela, el censo detallado de la población escolar.

ART. 18. * * * Cada director de escuela enviará el día último del mes al inspector provincial de instrucción pública y a la Secretaría del Ramo, una lista de asistencia general y una lista especial separada de las fallas en que los alumnos hayan incurrido.

ART. 19. Con vista de las listas de fallas, el inspector provincial impondrá * * * las multas que establece el artículo 3, ley 22 de 1907, o sean B. 0.25 por cada día. Estas multas serán cobradas por el inspector o por la autoridad a quien le delegue tal función y serán convertidas en arresto en la forma legal.

El producto de las multas por fallas ingresará al tesoro municipal y se destinará de preferencia a la reparación y compra de muebles escolares bajo la dirección del inspector provincial.

ART. 20. Los inspectores provinciales son responsables * * * del cumplimiento de las disposiciones del presente capítulo que tiene por objeto desarrollar el precepto constitucional de la enseñanza obligatoria.

ART. 24. El Secretario de Instrucción Pública podrá también crear escuelas nocturnas para adultos en los lugares en que, a su juicio, fueren necesarias.

Algunos meses más tarde, la asamblea nacional legisla sobre la materia en la forma siguiente:

ART. 2. El Poder Ejecutivo dispondrá que del Cuerpo de Policía Nacional se destine permanentemente el número de agentes que fuere necesario en las capitales de provincia, distritos, corregimientos y caseríos, para hacer efectiva la asistencia a las escuelas primarias.

ART. 3. Es obligatorio para los inspectores provinciales o seccionales de instrucción pública, imponer a los padres, tutores o encargados de los niños, las multas por falta de asistencia de estos a las clases o a los exámenes, de conformidad con los artículos 19 y 20 de la ley 11 de 1904 y el artículo 3 de la ley 22 de 1907. Las multas serán cobradas por el tesorero municipal respectivo y convertidas en arresto por el jefe político de la localidad, a razón de un día por cada dos balboas de multa y mediante aviso del inspector.

Tres años después tornó a legislar la Asamblea Nacional por medio de la ley 31 de 1913 que, en su parte pertinente, dice:

ART. 71. Créase en la República un cuerpo de policía escolar dependiente de la inspección general de enseñanza primaria, cuyos miembros serán nombrados por el Poder Ejecutivo.

ART. 72. El cuerpo de policía escolar constará hasta de 120 plazas. * * *

ART. 75. Las multas de que tratan el artículo 3 de la ley 22 de 1907 y el artículo 3 de la ley 45 de 1910, las impondrán los inspectores provinciales de instrucción pública en las cabeceras de inspección, y los inspectores locales en los demás lugares, e ingresarán al Tesoro Nacional.

Desde el año de 1911 comenzó a ponerse en vigor el sistema de multas y arrestos por inasistencia de los niños a las escuelas.

El inspector de instrucción pública de la capital recaudó en 1911 multas por valor de B. 155.05 y convirtió en arresto otras por valor de B. 166.62.

En 1914, el total de multas colectadas en la capital fué de B. 43.56, y en 1915 se había recaudado la suma de B. 25.50 hasta la fecha de mi salida de la ciudad.

3. ¿Qué factores determinan la extensión y esfera de la instrucción elemental? (Programa Preliminar del Segundo Congreso Científico Panamericano, pág. 19.)

Nuestra convención legisló en 1904 como sigue:

ART. 25. Las escuelas de enseñanza primaria se dividen en urbanas y rurales.

ART. 26. Son urbanas las situadas dentro del área de la población-cabecera del distrito o en las aldeas y caseríos erigidas en corregimientos.

ART. 27. Son rurales las que se establezcan en los campos o caseríos que no reúnan las condiciones de que trata el artículo anterior.

ART. 30. La enseñanza en las escuelas rurales sólo comprende los puntos más importantes de las escuelas primarias elementales.

ART. 34. * * * todas las escuelas primarias de la República se dividen en tres secciones que se denominarán: sección elemental, sección media y sección superior.

ART. 35. En la sección elemental se darán las enseñanzas que corresponden al 1º y 2º grados (o años escolares). (Ley 11 de 1904.)

Del artículo 30 arriba copiado, se deduce que en las escuelas rurales la enseñanza obligatoria era solo de dos años. Pero el Decreto Ejecutivo No. 2 de 1910 dispuso lo siguiente:

ART. 3. La obligación escolar se llena de tres modos: (1), Omisus; (2), omisus; (3), recibiendo * * * la enseñanza que en este decreto se establece como el mínimo de instrucción obligatoria.

ART. 25. Para los efectos de uniformar la enseñanza primaria y determinar la extensión que debe tener, las escuelas públicas serán de cuatro órdenes, así: Escuelas de tercer orden; escuelas de segundo orden; escuelas de primero orden; escuelas superiores. Las de tercer orden constan de 3 grados; las de segundo orden, de 4 grados; las de primer orden, de 5 grados; las escuelas superiores, de 6 grados.

ART. 26. En las escuelas de tercer orden se dará el mínimo de la enseñanza obligatoria * * *. Habrá, por lo tanto, escuelas de tercer orden donde quiera que se encuentre una población no menor de 25 familias. Las escuelas de otro orden, donde la importancia de la población lo requiera.

En virtud del anterior decreto, el *mínimum* de la enseñanza obligatoria pasó a ser de tres años en vez de dos.

Cinco años más tarde, la Asamblea Nacional dispuso lo siguiente en la ley 34 de 1915:

ART. 15. El *mínimum* de enseñanza obligatoria en las escuelas rurales será señalado en el plan de estudios y en los programas que para esas escuelas se adopten. Para las demás escuelas primarias el *mínimum* de enseñanza obligatoria alcanzará los conocimientos que se imparten en el cuarto grado de dichas escuelas. Exceptúanse de esta disposición las escuelas que funcionan en las cabeceras de los distritos siguientes: Panamá, Colón, Bocas del Toro, David, Chitré, Las Tablas, Santiago, Penonomé, Aguadulce, Antón, Los Santos, Soná, Chorrera y Taboga, para cuyos niños en edad escolar el *mínimum* de enseñanza obligatoria comprenderá íntegro el plan de estudios para los seis grados de la escuela primaria.

El artículo anterior hace depender el *mínimum* de enseñanza obligatoria de la importancia de los lugares en que residen los niños. Los planes de estudio de las escuelas rurales a que la ley hace alusión, fueron recientemente elaborados por una Comisión de Pedagogos nombrada por el Gobierno, y establecen un *mínimum* de tres grados.

4. ¿Qué lugar debe tener la enseñanza industrial en la instrucción elemental? (Programa Preliminar del Segundo Congreso Científico Panamericano, pág. 19).

La enseñanza industrial propiamente dicha no ha tenido aun cabida en nuestras escuelas primarias, a menos que se la considere representada por las clases de trabajos manuales y de dibujo, las que, sin duda, constituyen una excelente preparación para ciertas profesiones industriales.

Esas asignaturas fueron incluidas en el *pensum* de las escuelas por el decreto Ejecutivo No. 2 de 1910, ya citado, que organizó y reglamentó la enseñanza primaria.

5. ¿Qué condiciones deberían determinar los planes de estudios de las escuelas elementales de cualquier comunidad? (Programa Preliminar del Segundo Congreso Científico Panamericano, pag. 19).

La situación geográfica de Panamá ha contribuido a hacer del comercio y de las industrias de transportes los principales medios de vida de sus habitantes.

Nuestro Istmo es un centro distributivo por excelencia. Lo fué desde los primeros días de la Conquista, durante todo el régimen colonial y lo será cada día más, merced a la apertura del Canal de Panamá, ruta marítima incomparable.

Esto no obstante, la instrucción comercial no figura de manera especial en los programas de la enseñanza primaria, sino que se imparte independientemente en escuelas comerciales y cursos nocturnos, como se verá más adelante.

Empero, el estudio del inglés, que tiene para nosotros una importancia extremada, dadas nuestras excepcionales relaciones políticas y comerciales con el Gobierno y pueblo de los Estados Unidos, fué incluido en los planes de estudio de las escuelas primarias desde 1912, por decreto 60 de aquel año, expedido por la Secretaría de Instrucción Pública, en el cual se asignan al estudio del inglés dos horas semanales de clase en todos los grados de la escuela primaria. En 1914 se suprimió la clase de inglés en el primer grado, dejándola subsistente en todos los demás. En 1915 la Comisión Pedagógica que formuló los últimos planes de estudio, suprimió el inglés de los dos primeros grados, dejándolo intacto en los cuatro grados restantes, siempre con dos horas de clase por semana.

Las facilidades de comunicación con el mundo entero que ofrecen el Ferrocarril de Panamá, el Canal de Panamá, y las numerosas vías marítimas que desde las ciudades terminales del Istmo irradian hacia el norte y el sur del Continente, hacia Europa, Asia y Oceanía, despertaron desde temprano la atención de nuestros legisladores y gobernantes, quienes ven hoy en la agricultura la redención económica de nuestra República. El decreto No. 2 de 1910 hizo de la agricultura una materia fundamental de la enseñanza nacional, consagrándole dos horas semanales en los grados segundo y tercero. Suprimida en 1912, esa asignatura fué restaurada en 1915

con una hora semanal en el tercer grado y dos horas semanales en los grados cuarto, quinto y sexto. En las escuelas rurales, la enseñanza práctica de la agricultura figura hoy en todos los grados con varias horas semanales.

6. ¿En qué proporción deberían determinarse dichos planes de estudio por las autoridades locales y las del Estado? (Programa Preliminar del Segundo Congreso Científico Panamericano, pág. 19).

Nuestra iniciativa local en materia de instrucción pública ha sido sumamente deficiente. Sin la acción decisiva del Gobierno central, nuestro sistema de enseñanza pública estaría aún en pañales.

La historia de nuestros once años de vida independiente, demuestra que las funciones delegadas por los legisladores a los municipios, en el común empeño de organizar la instrucción pública, han tenido que ser en muchos casos reasumidas por el Estado para asegurar su buen desempeño. La experiencia de nuestro país, sea por su condición de país incipiente o por causas no determinadas aun, es desfavorable a la iniciativa local.

7. ¿Cómo debería dividirse la administración de las escuelas elementales entre las autoridades locales y las del Estado? (Programa Preliminar del Segundo Congreso Científico Panamericano, pág. 19).

La administración de las escuelas panameñas corresponde íntegramente al Gobierno de la Nación, a cuya acción está subordinada la de las autoridades locales. Los municipios sufragan—sí—ciertos gastos, proporcionalmente a su importancia económica, pero mediante la intervención de los inspectores provinciales y locales, quienes, no obstante ser pagados con fondos municipales, son agentes del Gobierno Nacional, nombrados y removidos por éste. Hasta los escribientes de las inspecciones son nombrados por el Poder Ejecutivo (art. 45, ley 34 de 1915).

8. ¿Debería ser una sola escuela la unidad local de administración en el distrito o en una esfera más amplia? (Programa Preliminar del Segundo Congreso Científico Panamericano, pág. 19).

Entre nosotros la unidad administrativa del distrito o la Provincia es la inspección de instrucción pública, la cual representa al Gobierno Nacional en la localidad a que su radio de acción se extiende.

No hay duda que este exceso de centralización desaparecerá cuando comience a desarrollarse la vida municipal.

El Secretario de Instrucción Pública recomendaba en 1912 la creación de juntas locales de instrucción que se encargaran de la gestión administrativa de las escuelas dejando a los inspectores la acción docente y fiscalizadora.

Nuestra misma constitución provee a necesidades de ese orden en su artículo 133, que dice: “* * * La ley podrá descentralizar la instrucción pública y destinarle rentas especiales.”

9. ¿Cuál debería ser el *mínimum* de preparación que debe exigirse a los profesores de las escuelas elementales de la ciudad? ¿Cuál para los de las escuelas elementales en el país? ¿Cuál es la manera más eficaz para la preparación de los profesores elementales de las escuelas de cada clase? (Programa Preliminar del Segundo Congreso Científico Panamericano, pág. 19.)

Los maestros de las escuelas primarias panameñas están divididos en cinco categorías distintas que corresponden a la categoría de la localidad en donde aquellos ejercen su ministerio.

No obstante que el *mínimum* de enseñanza obligatoria varía entre 3, 4 y 6 grados, según la importancia del distrito escolar, exíjese, sin embargo, a todos los maestros la misma preparación.

A remediar esta anomalía se encaminaron las siguientes disposiciones de la ley 45 de 1910:

ART. 14. En las escuelas primarias superiores que actualmente funcionan o que funcionen más tarde en las cabeceras de Provincia, podrá el Ejecutivo establecer un curso normal de un año de estudios para formar maestros para las escuelas rurales.

Pero de esta facultad parece no haber hecho uso el Poder Ejecutivo.

También se preocupa por este estado de cosas el Secretario de Instrucción Pública de 1914, quien sugiere a la Asamblea Nacional, en su memoria de ese año, que se establezcan dos escuelas normales inferiores—una de varones y otra de señoritas—en poblaciones de Provincias, con el fin de preparar maestros para las escuelas de baja categoría, que son las más numerosas en el país.

Los planes de estudio de las Escuelas Normales—los semilleros de maestros—han variado, por decirlo así, con cada Secretario de Instrucción Pública. Los de 1910 establecían un término de cinco años para las normales de varones y de cuatro años para las normales de mujeres. Los de 1912 redujeron a cuatro años el programa de los estudios para los normalistas varones. Los de 1915 han conservado el mismo número de años para los normalistas de ambos sexos.

ENSEÑANZA SECUNDARIA.

La segunda enseñanza es enteramente costeadada por el Gobierno panameño. Los municipios solo están obligados por la ley a contribuir para los gastos de la primera enseñanza.

Nuestra experiencia en achaques de enseñanza secundaria es más reciente e incompleta que en lo relativo a la enseñanza primaria.

La fundación de nuestro primer liceo propiamente dicho, data de 1909, no obstante que antes de esa época ya existían en Panamá escuelas normales de ambos sexos e institutos profesionales donde se daba una enseñanza superior a la primaria.

Por la ley 11 de 1904, la Convención Nacional dispuso crear un colegio de filosofía y letras juntamente con escuelas normales de ambos sexos. Estas últimas aparecieron inmediatamente, mas no así el primero.

Por ley 22 de 1907, la Asamblea Nacional dispuso la fundación de un Instituto Nacional que correspondía en parte al colegio de segunda enseñanza ideado por la convención y que tardó dos años más en ser una realidad. También ordenó la misma ley que se fundara una escuela de comercio e idiomas que fué creada inmediatamente y de la cual trataré al referirme a la enseñanza comercial.

Finalmente, la Secretaría de Instrucción Pública expidió el 30 de marzo de 1909 el decreto No. 17 de ese año, por el cual organizó el Instituto Nacional. Diversas modificaciones fueron introducidas luego en la economía general de este establecimiento de segunda enseñanza, cuya existencia parece hoy sólidamente asegurada.

El concepto que el Gobierno panameño tiene de la segunda enseñanza, puede inferirse del siguiente pasaje de la memoria del Secretario de Instrucción Pública a la Asamblea Nacional de 1914:

No se os escapa seguramente la necesidad de impulsar los estudios secundarios en el país con el fin de preparar cuanto antes elementos competentes de que tanto necesitamos para el desempeño de servicios públicos y privados.

De acuerdo con este criterio, los planes de estudio han sido formulados teniendo en cuenta las necesidades prácticas de la vida y las exigencias culturales de la enseñanza.

Preparar profesores de segunda enseñanza es actualmente imposible en Panamá, salvo para el ramo de las matemáticas. Funciona en el Instituto Nacional un curso superior de matemáticas regentado por un distinguido profesor alemán. Pero el Gobierno envía todos los años al exterior a jóvenes normalistas o liceistas que obtienen su beca por oposición y se especializan luego en algún ramo de la enseñanza: ciencias naturales, física y química, etc. Entre tanto, hemos recurrido al elemento extranjero y hemos contratado los servicios de profesores alemanes, italianos, americanos, belgas, etc., para proveer ciertas plazas de las Normales y del Liceo.

El problema de los métodos y la preparación para los profesores de la segunda enseñanza no podrá resolverse acertadamente entre nosotros mientras carezcamos de centros de enseñanza superior donde pudieran prepararse esos profesores, así como en nuestras normales se preparan hoy los maestros de enseñanza primaria.

ENSEÑANZA INDUSTRIAL, COMERCIAL, AGRÍCOLA, ARTÍSTICA Y PROFESIONAL.

(a) *Enseñanza industrial*.—Se imparte en la Escuela Nacional de Artes y Oficios, creada con ese título por la ley 11 de 1904, artículo 51; transformada en escuela industrial en 1910, fué devuelta en 1911 a su antigua condición y denominación de Escuela Nacional de Artes y Oficios.

(b) *Enseñanza comercial*.—Desde 1904 prestó la convención especial atención a la enseñanza comercial expidiendo la ley 11 tantas veces citada, cuyo artículo 49 faculta al Gobierno para establecer “una escuela de comercio destinada a suministrar a la juventud los conocimientos científicos y prácticos necesarios para la carrera mercantil.” De esta disposición nació el Colegio de Comercio e Idiomas, que tuvo vida efímera. En 1910 fué refundido en el Instituto Nacional, donde figuró con el nombre de Sección Mercantil. Luego desapareció para resurgir en 1913, en espíritu por lo menos, como Sección Comercial Nocturna del Instituto Nacional, con un programa de tres años.

(c) *Enseñanza Agrícola*.—Aunque autorizada desde 1904 por la ley 11 de aquel año, la enseñanza agrícola quedó en el papel hasta 1911, cuando la Asamblea Nacional, cediendo al voto popular, dictó una nueva ley que creaba una escuela nacional de agricultura. Esta ley, la No. 43 de 1911, corrió desgraciadamente la misma suerte que su antecesora. La Asamblea de 1913 dictó, a su turno, la ley No. 31, por la cual dispuso crear escuelas prácticas de agricultura o granjas modelos; y a principios de 1914 el Gobierno Nacional contrató los servicios del perito Sr. Henry Pittier, del Departamento de Agricultura de Washington, quien puso los cimientos de la actual Escuela de Agricultura que dirige el Dr. H. B. A. Groth, autor de un trabajo sobre enseñanza agrícola presentado al Congreso.

(d) *Enseñanza artística*.—La dan el Conservatorio Nacional de Música y Declamación y la Escuela de Pintura.

La primera de estas escuelas funciona desde 1904, sin más diferencia que la de haberse transformado, en 1910, de simple escuela de pocas asignaturas musicales que era, en conservatorio o escuela universal de música. La dirige el autor del presente trabajo, quien presenta al Congreso una monografía sobre el Conservatorio de Panamá.

La Escuela de Pintura es de reciente fundación. El Gobierno actual la creó en 1913 y la dirige desde entonces un artista nacional educado en París.

(e) *Enseñanza profesional*.—Bien que todas las escuelas anteriores lo sean de enseñanza profesional propiamente dicha, hase dado entre nosotros la denominación de “escuela profesional” a un establecimiento para mujeres donde se las enseña dibujo ornamental, bordado, tejidos, costura y modistería, telegrafía, mecanografía, estenografía, lavado y planchado, cocina y confección de sombreros.

Creada por ley especial en 1910, la Escuela Profesional de Mujeres no vino a tener existencia real sino en 1913, en virtud de una nueva ley expedida por la Asamblea de ese mismo año.

El Gobierno de Panamá, no contento con dar a los hijos del país instrucción gratuita en todos los ramos de la enseñanza, ha ido más allá todavía: ha hecho, en pequeña escala, ensayos de socialismo de estado.

Desde 1909 fué autorizada la Escuela de Artes y Oficios, por decreto del Ejecutivo Nacional, para hacer trabajos a particulares. El producto se repartía entre el director, los maestros y los alumnos. Esto aparte, se entiende, de los trabajos que la escuela hacía para el Gobierno, de acuerdo con formas y condiciones de pago reglamentadas por medio de otro decreto.

Dos años después, un nuevo decreto confirma a la Escuela de Artes y Oficios el privilegio de ejecutar, a título oneroso, trabajos para particulares (art. 36, decreto 11 de 1911).

Tres años más tarde, el Gobierno actual reglamenta la distribución de los beneficios netos provenientes de esos mismos trabajos por medio del decreto No. 2 de 1914.

El privilegio de ejecutar trabajos para particulares se concedió también, a la Escuela Profesional de Mujeres desde su fundación. Dice sobre esto el Secretario de Instru c-

ción Pública: "En los talleres de corte y confección de sombreros se han ejecutado ya varias obras de encargo que han rendido un pequeño producto a la escuela. También el taller de cocina proporciona alimento a cierto número de pensionistas a un precio bastante moderado pero siempre con beneficio para el establecimiento." (Memoria de 1914.)

Es digno de notarse que ninguno de estos privilegios ha suscitado protestas de parte de los industriales de la localidad.

ENSEÑANZA UNIVERSITARIA.

La ley 52 de 1904 consideró, en su artículo 12, como de la mayor urgencia para la República la construcción de un edificio destinado a servir de universidad. Esta opinión no fué, sin embargo, compartida por el Poder Ejecutivo, quien prestó oído indiferente a ese voto de la convención, y hoy carece todavía de universidad nuestra República.

A la pregunta formulada en el Programa Preliminar: "¿Deberían depender las universidades y colegios sostenidos por fondos públicos de poderes independientes y autónomos o deberían estar directamente bajo el dominio central del Estado?" nuestra ley orgánica de instrucción pública responde en favor de la doctrina centralista. Además, nuestra propia experiencia nos demuestra que sólo del apoyo oficial pueden instituciones de esa clase esperar entre nosotros vida estable y segura.

La universidad privada no existe, que yo sepa, en la América española, tal vez no porque las leyes la prohiban, sino porque no se ha intentado competir con el Estado en ese terreno. Nuestro sistema de instrucción pública se inspira en el sistema francés que asigna al Estado la obligación de suministrar gratuitamente al pueblo la enseñanza primaria, secundaria, superior, técnica y profesional.

Durante la época colonial fundóse en la ciudad de Panamá la Universidad de San Javier, creada por Real Cédula del 3 de junio de 1749, y destruida por un incendio en 1781; no revivió de sus cenizas.

Durante la época colombiana, el Colegio del Istmo, Seminario fundado en 1824, fué erigido en Universidad en 1841, con facultades de Teología, Jurisprudencia, Latinidad y Letras, Filosofía.

La enseñanza universitaria declina luego en el Istmo, pues en 1852 el plan de estudios del mismo Colegio Seminario sólo comprende "Leyes de Procedimiento Civil y Criminal," y "Derecho Canónico," al lado de las asignaturas comunes a un colegio de segunda enseñanza.

Después desaparece hasta el más ligero vestigio de enseñanza superior.

Con la independencia, la primera preocupación de la República de Panamá fué desarrollar la instrucción pública adoptando métodos y sistemas tan completos y modernos como fuese posible. En una década hemos logrado asentar sobre bases firmes la enseñanza primaria, normal y secundaria; pero es hora ya de pensar en la organización de la enseñanza superior. El Liceo del Instituto Nacional ha dado las primeras cosechas de bachilleres y al advenimiento de la vida universitaria comienza a hacerse sentir como una necesidad nacional.

En 1913 el entonces Secretario de Estado de la Unión Americana, Mr. William J. Bryan, lanzó la idea de una universidad en Panamá como elemento de inestimable valor para la propaganda de las ideas de paz, libertad y justicia entre las naciones de la tierra.

Antes de Mr. Bryan, el Dr. E. G. Dexter, a la sazón Comisionado de Educación del Gobierno Americano en Puerto Rico, había lanzado ante la Conferencia de Lake Mohonk la idea de una Universidad Panamericana en Puerto Rico. Escogiendo aquella isla para teatro de su universidad, el Dr. Dexter desplazaba evidentemente el centro de gravedad panamericano; pero llamado por el Gobierno de Panamá a encargarse de la rectoría del Instituto Nacional en 1912, se apresuró a rectificar su error dirigiendo al Presidente de Panamá la importante comunicación que aparece en

la Revista de Instrucción Pública, nos. 1 y 2 de 1913. He aquí algunos de sus párrafos más importantes:

Las ideas expresadas recientemente por el Sr. Bryan, Secretario de Estado actual de los Estados Unidos, referente a una universidad en el Istmo de Panamá, han merecido grande atención de la prensa del mundo entero. * * *

Aquí en Panamá tenemos magnífico edificio para formar una buena institución de altos estudios, una verdadera Universidad Panamericana, y debemos aprovecharnos del interés suscitado por las palabras del Sr. Bryan para fomentar su establecimiento. No hay lugar más apropiado para ella. El mundo intelectual necesita de un punto de contacto académico entre los de habla castellana y los de habla inglesa del mundo occidental.

Como en los días de su esplendor "todas las vías conducían a Roma," así, con la apertura del canal, todas las vías marítimas conducirán a Panamá, qué debe ser intelectualmente como comercialmente un centro más importante.

Tenemos pueblo inteligente, Gobierno estable y progresista, no empobrecido tesoro; carecemos de deudas y tenemos una buena suma de dinero hipotecada; las condiciones sanitarias son las mejores de las regiones tropicales; el clima es bueno; tenemos en la ciudad de Panamá, Capital de la República, todas las ventajas de un centro del más alto refinamiento; un teatro nacional; bibliotecas, clubs, iglesias, etc.

¿Qué país tiene condiciones más propicias? * * * me parece probable que podamos, disfrutando de la amistad del Sr. Bryan, conseguir la fundación de una cátedra de lengua y literatura inglesas.

Al mismo tiempo, debemos empeñarnos en solicitar el apoyo de los demás países del mundo, especialmente en Europa.

España debe ser interesada a fin de perpetuar su idioma, y también Francia y Alemania.

¿Qué cosa más apropiada, significativa y halagadora para esos países, en celebración del término de la obra más estupenda del mundo, el Canal, que la fundación de cátedras de sus respectivas lenguas, en una digna institución? Esos países, los que más beneficiarán con el canal, deben, por consiguiente, interesarse en la perpetuación de sus lenguas en nuestras orillas.

Con cátedras de las lenguas modernas fundadas así, podremos atraer estudiantes de todas las Repúblicas americanas; pero tal desarrollo depende de la cooperación de fuerzas extrañas a la República, como dejo indicado.

En cuanto a la facultad de medicina, tenemos una oportunidad sin igual entre las Repúblicas de América. El mundo occidental carece de institutos adecuados al estudio de las enfermedades tropicales, y los médicos y las facultades de medicina de los otros países deben interesarse en una institución semejante. Las hay en las Indias y en Egipto y también en Liverpool (Inglaterra), cuya facultad de medicina tiene especialidad, aunque de manera teórica, de enfermedades tropicales; pero los médicos de las Américas carecen de facilidades clínicas, de oportunidades de proseguir sus estudios en esas materias sin cruzar el Océano Atlántico.

Reúne nuestra República todas las condiciones de clima para el establecimiento de una verdadera facultad de medicina tropical, y en mi concepto debemos anunciarlo con la apertura del canal. Pero debemos interesar a las demás naciones en el movimiento, consiguiendo un intercambio de profesores en relación con los cursos.

Tenemos aquí en la República médicos de reputación y en la zona otros afectados al Hospital de Ancón y al Ejército de los Estados Unidos y cuya colaboración podemos sin duda alguna conseguir. El Dr. Gorgas, hombre de reputación universal, ha pasado muchos años con nosotros y será una ayuda importantísima en dicho movimiento.

La facultad de medicina, si bien ha de combinar los intereses y la participación de las naciones más prominentes del nuevo mundo, debe establecerse y permanecer bajo la dependencia del Gobierno de la República de Panamá.

Casi lo mismo podemos decir de la facultad de derecho. Tenemos en uso en los países de la América dos códigos y dos prácticas distintas; el Código Romano en las Repúblicas españolas y el "Common Law of England" en los Estados Unidos y Canadá.

Las constantes relaciones comerciales, que aumentan entre los americanos de lenguas y procedimientos legales distintos, engendran pleitos y diferencias de opinión, que hacen necesario el conocimiento por parte de los unos de las prácticas legales de los otros, y evidencian la oportunidad de establecer una institución en la que el estudiante pueda familiarizarse, no solamente con el idioma sino con la base legal de la otra raza. Ahora bien. ¿Qué lugar es más conveniente que el nuestro para tal establecimiento?

Podemos conseguir por medio de intercambios los profesores más competentes de las Repúblicas de América, tanto del Sur como del Norte.

Respecto a los edificios, bastan para el comienzo de nuestros labores * * *.

En conclusión, hago las siguientes recomendaciones especiales:

1. Por medio de nuestro representante en Washington o de enviado especial, procurar interesar al Sr. Bryan y a los síndicos de Carnegie Endowment, de Rockefeller Fund y demás asociaciones de educación de los Estados Unidos, en nuestro movimiento.

2. Por medio de nuestros representantes en las capitales de España, Francia, Alemania e Italia, procurar interesar a dichos Gobiernos en establecer cátedras de sus idiomas en nuestra proyectada universidad.

3. Por medio de nuestros representantes en las capitales de las Repúblicas sudamericanas, tratar con ellos respecto a una afiliación universitaria y científica, y establecer colegios de medicina tropical y de derecho, basando la dicha asociación en un intercambio de profesores.

4. Establecer por nuestros propios esfuerzos y fondos, colegios de dentistería, farmacia y comercio, los cuales serán considerados no como instituciones distintas, sino como departamentos de una universidad formalmente organizada.

Estas son las miras del Dr. Dexter bosquejadas a grandes rasgos. Pero habría que estudiar detenidamente la cuestión para resolver luego, con pleno conocimiento de causa, qué facultades sería más práctico y hacedero establecer al principio en la futura universidad. Una comisión universitaria panamericana reunida en Panamá, sería, a mi juicio, la entidad apta para desempeñar acertadamente ese cometido.

El Sr. Bryan y el Dr. Dexter saben que Panamá ocupa, respecto de las repúblicas americanas, la misma situación que el corazón en el organismo humano: todas las corrientes de ideas y actividades que bajan del Norte o suben del Sur, allí han de confluir. Todos los pueblos latinos convergen instintivamente la mirada hacia ese pequeño país, Benjamín de los Estados continentales, atravesado por la angosta faja de tierra denominada Zona del Canal, donde se opera la yuxtaposición de las dos razas y las dos lenguas principales del hemisferio dentro de una común aspiración al progreso universal. Sirve, pues, como si dijéramos, de piedra de toque a la sinceridad y la buena fe panamericana.

Tratándose de un país en el cual la tradición universitaria se perdió años ha y con ella los vicios y las deficiencias de los métodos arcaicos, la erección de una universidad inspirada en sentimientos de buena armonía continental, pondría al alcance de los distinguidos universitarios que en este Congreso han avanzado ideas acerca de la reforma y reorganización de las universidades, un terreno altamente propicio para sus fines experimentales.

Como Delegado por mi país a la Sección IV de este Congreso, faltaría a mi deber de conciencia si dejara escapar esta oportunidad para agitar nuevamente la idea de una universidad panamericana en Panamá, impetrando a la vez en favor de ella la simpatía y cooperación de todas las naciones hermanas del continente. Es mi ardiente aspiración que de las entrañas de este Congreso nazca a la vida aquella benéfica institución, como una de sus más hermosas y fecundas concepciones.

Tengo el más alto respeto por las opiniones ajenas y la mayor tolerancia por las opiniones contrarias a las mías. Creo en la virtualidad de las ideas, y estimo que toda buena conclusión se impone por sí misma, así como las malas se eliminan de la misma manera, por más que las respalde el voto de la mayoría.

En caso, empero, de que el sentimiento general recibiese con favor las sugerencias contenidas en la segunda parte de este escrito, el autor se permitiría proponer una moción concebida en estos o parecidos términos:

El Segundo Congreso Científico Pan-Americano, * * *.

Resuelve invitar a los Gobiernos de los países que forman la Unión Panamericana a que estudien la manera y acuerden los medios más adecuados para realizar la idea de una Universidad Panamericana en la ciudad de Panamá.

The CHAIRMAN.—We have all been delighted with the presentation of this topic by Prof. Garay. I shall now call on Srta. Graciela Mandujano, of Chile, who has prepared a paper on "The teaching of modern languages in the secondary schools of Chile."

LOS IDIOMAS EXTRANJEROS EN LA ENSEÑANZA SECUNDARIA DE CHILE.

Por GRACIELA MANDUJANO,

Profesora Titulada de la Universidad de Chile.

No ha sido curiosidad ni el antiguo ideal de disciplina intelectual, sino la necesidad de entender y de hacernos entender lo que nos ha obligado a dar tanta importancia a los idiomas extranjeros en nuestros programas de enseñanza secundaria.

El conocimiento del francés ha sido considerado como requisito importante de la persona culta; debemos aprender el alemán si nos dedicamos a investigación científica, y el inglés se hace necesario como idioma del comercio, o en caso de que queramos hacer una visita interesante al extranjero. Este interés de parte nuestra no era correspondido por un interés análogo de los extranjeros por nuestro idioma. ¿Quiénes estudiaban castellano algunos años ha? Sólo aquellos que tenían mucho empeño en leer el Quijote en el original, y estos eran contados.

Podría decirse y se ha dicho que nosotros necesitamos conocer otros idiomas, y que los extranjeros no necesitan el español. Esto pudo ser así; pero como es posible que mientras cerca de la mitad de un continente habla español—sin mencionar España—no tenga la otra mitad ningún interés por ponerse en contacto directo con aquellas naciones. Me atrevería a decir que la necesidad siempre ha existido donde hoy se siente, pero que sólo no se había presentado la oportunidad de sentirla tan agudamente como ahora. Y si ha venido, demos por ella gracias al cielo, y no la dejemos pasar.

Sea como se sea, nuestras condiciones especiales y nuestras necesidades nos han obligado como ya lo dije, a dar gran importancia a los idiomas extranjeros. Estos debían ser enseñados y eran enseñados; nadie preguntaba cómo y por quién. Lo único que se requería del profesor era que procediera del país cuyo idioma iba a enseñar, sin que se diera ninguna importancia a su preparación científica y pedagógica. Había tal sed de instrucción y los padres estaban tan ansiosos de enviar a sus hijos a una buena escuela, que una vez conseguido esto, a menudo se olvidaban con que objeto el chico la frecuentaba.

Casi en la generalidad de los casos, los padres mismos no conocían los nuevos programas, y tenían la habilidad de no juzgar lo que no entendían. Además tenían una fe tan ciega en la autoridad del maestro y en el valor de una disciplina intelectual, que poco les importaba el que sus hijos estudiaran por años de años algún idioma que, gracias al método empleado, jamás llegarían a hablar y tal vez ni siquiera a entender.

Así se empezó, y la práctica se hizo tradicional. Los profesores adoptaron la rutina y nadie pensó en innovar. Los padres y los directores de colegios no ponían objeción a que en la primera clase de inglés se enseñara el alfabeto comparado y que se siguiera con los diptongos y palabras sueltas y sin sentido "de difícil ortografía." Se consideraba un progreso rápido si los niños, después de algunos meses de penoso esfuerzo, eran capaces, no de formarse sino de traducir frases tan inútiles como: "¿Tiene Ud. el bastón del zapatero? No; no tengo el bastón del zapatero sino la muñeca de su hermana.

Parece que nadie se había dado cuenta de que no era la dificultad misma del tema sino el mal método empleado lo que producía tan pobres resultados.

Fué necesario que un profesor alemán de nuestra universidad, Dr. R. Lenz, viniera a hacer una revolución en nuestros antiguos métodos. Su obra fué al mismo tiempo constructiva, porque a él debemos no sólo la introducción de los métodos modernos en la enseñanza de idiomas, sino también la creación, en nuestra universidad, de un departamento en el cual se trata de preparar profesores nacionales para la enseñanza en los establecimientos de instrucción secundaria.

Por mucho tiempo el estudio de dos idiomas ha sido obligatorio en nuestros "liceos." Uno de ellos durante los seis años de "humanidades" y el otro paralelamente, durante

los últimos tres. Nominalmente se deja libertad al alumno para elegir el idioma con que quiere empezar; pero como el francés, siendo más fácil, lleva la preferencia, en gran número de nuestros liceos no se dan cursos de inglés en los primeros años.

Esta circunstancia fué el objeto de una interesante discusión en un Congreso de Educación que se celebró en mi país hace tres años. Se hizo presente entonces, que para facilitar las futuras relaciones con los Estados Unidos, que la apertura del canal de Panamá hacía posible, el estudio del inglés se hacía más necesario que el del francés, y que en consecuencia debería darse mayor impulso a su estudio en los liceos.

No sólo la tradición estaba en contra de esta innovación, sino que había una dificultad práctica que vencer: no había número suficiente de profesores competentes de inglés que tomaran el lugar de los de francés. Se rechazó la idea de "importarlos" de Inglaterra o de los Estados Unidos, porque hoy es opinión común que el profesor no sólo debe poseer el idioma que va a enseñar, sino que también, para que pueda apreciar el valor relativo de su enseñanza y las dificultades que se presentan al discípulo debe conocer el idioma, las costumbres y condiciones de vida de éste.

El antiguo método de simple traducción ha sido suplantado por el método directo que da tanta vida e interés al tema. Lo peor es que sólo aquellos que conocen a fondo el idioma pueden manejar este método con buenos resultados. Y una persona que sigue un curso de tres o cuatro años en cualquier universidad nunca llegará, a pesar de todos sus esfuerzos, a mantener una conversación, sino que, como alguien dijo el otro día, lo único que será capaz de hacer será preguntar al mozo cuál es la traducción de su lista de platos.

Y si un profesor así preparado tiene la desgracia de contar entre sus alumnos alguno que posea como lengua materna el idioma que él trata de enseñar, perderá indudablemente toda confianza en sí mismo y cometerá errores que resultarán a su vez en desmedro de la disciplina.

Los dos métodos han dado pobres resultados, de modo que todavía hoy nuestro problema es: ¿cómo preparar un profesorado nacional realmente idóneo? Hay quienes aconsejan que los cursos se prolonguen tanto como sea necesario, cinco o seis años en vez de cuatro. Eso sería ideal; pero como casi nadie se prepara para enseñar idiomas en los liceos por amor al arte, sino como un medio de ganarse la vida, se encontrarían pocas personas dispuestas a hacer el sacrificio. Otros aconsejan no otorgar diplomas hasta que el futuro profesor haya visitado por un año a lo menos el país cuyo idioma va enseñar. La misma dificultad sale al paso. Los estudiantes carecen de medios para darse ese placer.

En nuestra universidad, sin embargo, se ha hecho lo posible por hacer frente al problema. Junto con los cursos teóricos en que se enseña gramática, gótico, anglosajón, literatura, etc. se ofrecen cursos de conversación los cuales están a cargo de cultas y bien preparadas personas de Inglaterra y Norte América. Estos son la única oportunidad de práctica oral sistemática, y constituyen un gran adelanto, pero no son lo suficiente.

Y ahora que, con la guerra, y la apertura del Canal de Panamá, y los Congresos Panamericanos, y para facilitar las relaciones financieras, científicas y sociales entre ambas Américas que confiamos han de producirse, necesitamos más que nunca un conocimiento mutuo.

Se necesita en este país saber más de nuestras costumbres y modos de vivir. Nosotros deberíamos saber más de las vuestras. Nuestras relaciones internacionales no serán nunca otra cosa que un compromiso político y fácil de anular si esta inteligencia mutua no se extiende a las masas del pueblo. Y esto no será posible mientras no exista un intercambio de idiomas.

Ahora que reconocemos la necesidad común, ¿por qué no cooperar? ¿Qué puede hacer este congreso para dar mayor impulso al intercambio de estudiantes de habla inglesa y española?

No hay nadie hoy que considere al castellano como el idioma en el cual Cervantes escribió su obra inmortal, sino como el medio de expresión de un grupo de naciones progresistas que ocupan medio continente.

Aunque estas ideas no son originales, pues han sido ya repetidas, no es un profesor de sociología, ni un gran estadista quien las presenta hoy a vuestra consideración, sino una persona que ha experimentado las dificultades en la persecución del ideal, que cree en su posible realización y en los beneficios que reportaría.

Además, cuanto digamos en conexión con esto será poco, hasta que estos ideales sean una realidad y podamos disfrutar de sus ventajas.

The CHAIRMAN. I am sure we are all very much indebted to Srta. Mandujano for her charming address, and I can assure her that we, on this side of the Isthmus, are just as anxious to develop a real living knowledge, not only of the South American languages but of South American culture and ideals, as they are to get ours. To achieve it may take a long while; perhaps all of us shall not see the full fruits, but certainly the work has started in this country most vigorously and enthusiastically. We are still learning how, just as they are.

The next paper on the program is one by Prof. Rowe, of the University of Pennsylvania. Prof. Rowe is confined to his house by illness, but I believe his paper is here.

(The paper of Prof. Rowe was read in English by the chairman.)

THE DEVELOPMENT OF CULTURAL TIES BETWEEN THE REPUBLICS OF AMERICA THROUGH THE INTERCHANGE OF PROFESSORS AND STUDENTS.

By L. S. ROWE,

Head Professor of Political Science, University of Pennsylvania.

The national antagonisms and racial hatreds engendered by the European war have placed a new obligation on the Republics of America, an obligation which assumes the importance and dignity of a world duty. Irrespective of any national or international advantages that must necessarily accrue to us from emphasizing the spirit of cooperation and mutual helpfulness, there is a high and almost sacred duty involved in demonstrating to the world that no stable and permanent civilization can be built up on the basis of antagonism and hatred. It is only through such a high concept of their international obligations that the Americas can perform those services which they are manifestly called upon to perform by reason of the great natural privileges which have been conferred upon them.

We must not delude ourselves with the thought that the development of closer understanding between the peoples of America is dependent on the development of closer commercial ties. If further demonstration of this principle be sought it is only necessary to study Great Britain's relations with the countries of South America. For nearly three generations she has occupied a dominant commercial position, and yet during that period the cultural ties with Great Britain give no indication of having been materially strengthened. Real international understanding and mutual

comprehension are not necessary by-products of closer commercial ties. Such understanding may be the outcome of common historical antecedents, community of language and literature, but if these elements do not exist it is only through conscious planning and conscious effort that the national misconceptions due to ignorance can be destroyed and the foundations laid for that closer understanding upon which effective international cooperation must rest. In no other section of the world is this concerted action so necessary as on the American continent at the present juncture in the world's affairs. The events now transpiring in Europe have again raised the question with renewed insistence, the question whether democratic government can be carried to a high plane of efficiency in the performance of its administrative functions and whether, under the democratic régime the full force and power of a nation can, in moments of crises, be organized for the accomplishment of national purposes. To this extent, at all events, democracy is on trial, and one of the most important factors in making this trial a success is to make the results of any governmental accomplishment in any section of the continent available to all.

It is not sufficient, however, that these close relations exist solely as between the organized Governments of the American Republics. They must be supplemented and fortified by innumerable currents of thought and action binding together the people individually as well as the numerous societies and organizations pursuing similar purposes, scientific, civic, and social.

In other words, it must be America's ambition to give a new meaning to the term and to the fact of international cooperation. It is an ambition which may well fire the enthusiasm of every patriotic citizen, for the example thus given can not help but exert a far-reaching influence on international relations throughout the world. "What then," you will ask, "are the specific means through which this new spirit can be developed?" It would take me far beyond the limits assigned to me in this discussion to attempt an exhaustive analysis. There are, however, three or four avenues open to us at the present time of such importance that their immediate utilization is a matter of much moment.

In the first place, opportunity should be given to select groups of teachers of primary and secondary schools in all the countries of the American Continent to become acquainted with the social, economic, and political conditions throughout the continent. The teaching of history, geography, and civics must break its present narrow bounds and become the vehicle through which the rising generation shall be put on the high road to a continental point of view. The narrowness of instruction in history and geography in the United States is nothing less than appalling when we stop to consider the growing power and influence of the country.

Secondly, a well organized plan should be perfected for furthering the interchange of university students. Long continued inquiries in the United States have shown that the universities of this country are ready and anxious to cooperate in such a plan. We have hardly begun to realize to what an extent university students may become the agents of international cooperation.

Thirdly, the interchange of professors should be made an integral part of the educational organization of our higher institutions. The difficulties of language are gradually being overcome, and we may now confidently look forward to the time when the results of the most advanced research will be made available to every section of the American Continent.

Finally, a carefully organized plan should be developed to give to the graduates of technical schools opportunities for practical training and experience in great industrial establishments. Owing to the relatively advanced industrial development of the United States this will mean that at first these opportunities should be furnished to graduates of technical schools in Central and South America who may wish to come to the United States. The results of an inquiry among some of the leading

establishments have shown that they are ready to take a certain number of such students and give to them practical contact with the great industrial processes. Men so trained will in the course of time be utilized by these establishments as agents in the countries from which they come.

These are but a few of the many currents of action and counteraction that can be set in motion for the purpose of bringing about a thorough understanding of the ideas and ideals that dominate the different peoples of America.

We in the United States stand in special need of this training in true internationalism, because of all the peoples of the American Continent, the people of the United States, in spite of their cosmopolitan makeup, give evidence of a surprisingly limited capacity to understand a point of view different from their own. This shortcoming of the public mind is a real national menace. It must be eliminated if we are ever to make our influence felt for higher and better things. Our great difficulty has been that the national mind has not advanced at the same pace as our national influence. A nation may take itself too seriously, but it can never exaggerate the importance and seriousness of its mission. The difficulty in the United States is that we have taken ourselves somewhat too seriously and we have failed clearly to visualize the importance of our international mission. In this respect we can learn much from our sister republics. What Dr. Butler has called "the international mind" has developed far more rapidly in the other countries of America than in the United States. We must bring our thinking in this respect to a level with that of our southern neighbors. By so doing we will forever destroy any misconceptions that may exist with reference to what the United States shall stand for in the development of international relations.

The CHAIRMAN. The next paper will be read by Dr. Clyde Furst, who is Secretary of the Carnegie Foundation for the Advancement of Teaching. The title of Dr. Furst's paper is "The status of the university professor in the United States."

Mr. FURST. Mr. Chairman, ladies and gentlemen, I should perhaps say that this paper, being written primarily for Latin American readers, includes a number of matters that are perfectly well known to most of us in the United States but are given here because our Latin American neighbors manage these matters quite differently. The university professor in the United States is almost always a man who gives his entire time to teaching; the university teacher of South America is almost always a professional man who gives a certain amount of his time to teaching. The paper is written as it is because of the large number of differences in such fundamental matters.

THE STATUS OF THE UNIVERSITY PROFESSOR IN THE UNITED STATES.

By CLYDE FURST,

Secretary of the Carnegie Foundation for the Advancement of Teaching.

There are in the United States about 150 universities. Forty of these are supported and controlled by the States in which they are situated, 20 by the Roman Catholic church, 50 by Protestant churches, and 40 are independent of both church and state.

How many of these institutions deserve the name of university it is difficult to say. The Association of American Universities, which determines its own membership, includes 22 institutions—11 that are controlled by States, 1 by the Roman Catholic church, and 1 by a Protestant church, and 9 institutions that are independent. This group of institutions includes, without doubt, the strongest universities in the country, and the status of their professors may be considered representative.

In organization, these institutions are all autonomous, their final control resting in each case in a board of regents or trustees, the members of which, usually, are appointed by the governor of the State in the case of State institutions, or are self-elected for long terms in the case of those that are independent. These regents or trustees are always representative and often distinguished citizens, and are frequently graduates of the institutions which they direct. They are responsible for income and expenditure, for appointing and fixing the salaries of the teaching staff, and for the formal approval of the plans of the faculty concerning academic matters.

Perhaps the most distinctive feature of the universities of the United States is the importance of the office of the president. Appointed by the trustees for an indefinite term, he gives all of his time to the institution as its official head, connecting the trustees with the faculty, of which he is chairman, and representing both before the public. The incongruity in a democracy of concentrating so much power in a single individual has been pointed out repeatedly, but it is generally agreed that this arrangement has been one of the chief sources of the extraordinary development of universities in the United States, and the dangers that are implied in it are generally considered to be mainly theoretical. All of the presidents of the representative institutions that have been mentioned were chosen because they combined administrative ability with distinction as scholars and teachers. They are, without exception, men of scholarly training, who have won national and often international reputation for their contributions as professors to their chosen fields of knowledge, which include the humanities, the exact sciences, the political and social sciences, philosophy, psychology and education, and law and medicine. Under the leadership of such professor-presidents the status of the university professor is one of stability, freedom, and distinction. The only members of the faculties who lack freedom are the presidents themselves, since in the multiplicity of their duties they are seldom able to continue their productivity as scholars. Their application of the professorial habit to wider fields in public addresses, however, has made the influence of academic oratory in the United States second only to that of the statesmen.

The organization of these representative universities comprises, further, a considerable number of administrative officers—deans of faculties, directors of schools, secretaries, registrars, and the like. These officers also usually have been, and frequently continue to be, university teachers, chosen for their administrative ability, and appointed by the trustees upon the recommendation of the president after the usually informal recommendation of the faculty. The faculties jealously guard their right of determining what courses of instruction shall be given and of fixing the requirements for the admission and graduation of students. As, however, the professor usually considers administrative work on his own part an unwelcome interruption of his teaching and research, such matters are left, ordinarily, to the administrative officers, subject to a faculty and committee control, which is usually merely formal. Whenever necessary, as in large questions of policy, the faculty direction becomes active and responsible. The administration of equipment, income, and expenditure, also, is important—half of the institutions that have been mentioned have each an equipment valued at more than \$10,000,000, including libraries of half a million books each, and two-thirds of them have an income of more than a million dollars a year. Except, however, to express his own needs and desires, the professor attends but little to these financial and material affairs, leaving them to librarians, treasurers, bursars, superintendents of buildings, and similar officers.

The professor himself is usually a person whom circumstance or an early interest in learning has devoted wholly to the intellectual life. His or her preparation—for about 10 per cent of university professors are women—has included a dozen years of elementary and secondary schooling, four years in an academic college leading to the degree of bachelor of arts, and three or four years of graduate or professional training terminating in a professional degree or the degree of doctor of philosophy. European study does not now form a part of this preparation so often as it did in earlier years, but it is an almost invariable supplement. An acquaintance with Latin-America is still an unusual distinction. After such preparation, college or university teaching is begun at the age of 25 or 26, and advancement depends upon skill in teaching and accomplishment in research. The representative instructor is 30 years of age, the junior professor 35, the professor between 40 and 45.

The appointment and promotion of the professor is determined by his colleagues, sometimes formally, but usually by informal consensus of opinion and recommendation to the president, upon whose formal recommendation the appointment is made by the trustees. Instructors are usually appointed from year to year; junior professors for periods of 3, or 5, or 10 years; full professors are appointed at first for one such term, and then indefinitely. The tenure of the professor is jealously guarded by the profession. Each case of dismissal or failure to receive reappointment is thoroughly canvassed, sometimes in periodicals and newspapers, with the result that a committee of the American Sociological Society recently reported its inability to discover more than a dozen genuine instances of unjust dismissal in 20 years.

The salary of the professor is not large. The representative instructor in the institutions that have been mentioned receives \$1,200 a year; The representative junior professor receives from \$2,000 to \$3,000; the representative full professor, from \$3,000 to \$5,000. Perhaps 150 professors in the country are in receipt of \$5,000 a year; perhaps half that number receive \$6,000 or \$7,000 or \$7,500. A recent statistical study has shown that special distinction is regularly recognized by advancement in salary. The professor who becomes president may double his income, although usually he increases it by about half. There are, however, additional considerations. Outside of teaching from 6 to 12 hours a week, preparing for this teaching, consulting with students, and whatever committee work he chooses to undertake, the professor's time is his own. On one or two days each week he has no assignments; he, like his students, has recesses of half a week, or a week, or 10 days in the autumn, at Christmas, and in the spring. He has at least three months of vacation each summer. Once in every seven years he has a sabbatical year's leave on half pay. Much of this free time he devotes to his scholarly work. Some of it he may give to teaching for extra pay in the university's afternoon, evening, Saturday, summer, or correspondence courses. The professor is in demand also for lectures and addresses and published articles, for all of which he receives remuneration. Not infrequently his books sell well, sometimes widely; and his scientific investigations frequently have a commercial value, which accrues to him. If he is a teacher in a professional school, it is considered appropriate for him to give a part of his time to professional consultation and advice. In these ways the salary of the representative professor may be increased by half; sometimes it is more than doubled. His expenditures, moreover, are considerably reduced by the university's provision of offices and clerical assistance, of laboratories and supplies, of clubs, and sometimes of residences, of free instruction for members of his family, and, often, of discounts on his purchases, so that his money goes a fourth or a half again as far as that of the independent scholar. In a hundred institutions, also, the professor looks forward to a pension of rather more than half pay at 65, or earlier in case of disability, with a proportional provision for his widow for life. In fine, the financial status of the university professor in the better institutions in the United States is so arranged that he need not suffer serious financial

anxiety, even though living in a country where the standard of living is high and where personal expenditure is lavish.

The work of the professor naturally varies in accordance with the faculty to which he is attached. The institutions that have been mentioned are composed of from 2 to 20 faculties. All of them have academic colleges and graduate schools, and all but three have faculties of medicine, law, and engineering. In a third of them medicine is accompanied by pharmacy and dentistry, and in the same number engineering is accompanied by architecture. Half of the universities have faculties of education and a third have schools of commerce. Only one-fourth have faculties of agriculture, this field being usually cultivated in separate institutions; and but two have schools of forestry, this being usually associated with agriculture. Only five universities have faculties of theology, such instruction being usually given in separate seminaries. Five institutions also have faculties of the fine arts and of music and two have schools of journalism and of library practice, all of these subjects being comparatively new in university recognition.

The academic college, or faculty of arts, or of liberal arts, or of arts and letters, or of arts, letters, and science, as it is variously called, aims to provide both a broad general culture and a foundation for professional training. Requiring for entrance eight years of elementary and four of secondary schooling, the academic college ordinarily expects the student to devote two years to such fundamental subjects as ancient and modern foreign languages, English, history, mathematics, and the natural sciences. The two years that follow may be devoted to a choice of subjects which is limited only by the resources of the institution. There are, of course, many variations of this plan, like the free elective system, which allows the student to study whatever he likes; or the major subject plan, which relates all of his work to some dominant interest; or the group system of selecting subjects in several related fields. There is, however, a general opinion that there are certain subjects with which every student should have some acquaintance, that every student, further, should do advanced as well as elementary work in one or more fields, and that there should be a reasonable margin for absolutely free choice. All of these subjects the professor teaches as he likes, sometimes in a traditional way, sometimes with a careful consideration of method. In the ancient languages, which are still generally retained as the epitome of historic culture, there is a good deal of mere preparation and recitation of lessons. The same is true of modern languages, although what is called the "direct method" is increasingly used. The languages most generally taught are French and German; the third was usually Italian until recently, when Spanish has far surpassed it in popularity. Portuguese is seldom studied. Most students learn to read one or more foreign languages, but the student, or even the professor, who learns to speak them is comparatively rare. In English the effort is to develop, through practice and correction, a habit of writing respectably, and there is a strong new tendency to require that every written exercise in every department shall meet the standards of the department of English. Concerning literature, the success of the effort to develop intelligent appreciation, largely by lectures, is considered doubtful. The lecture method is increasingly questioned also in history, where it is now frequently accompanied by the use of the seminar method, particularly in dealing with recent or contemporary events. In the sciences the laboratory method is invariable, resulting in what is possibly the best teaching that is done in the colleges. The academic college endeavors, moreover, to care not only for the student's intellectual development, but also for his general welfare. Dormitories, gymnasias, dining halls, clubs, and sundry other provisions for the health and happiness of the undergraduate are general, and the ideal professor in the university college is the gifted teacher who also has a deep and wide personal interest in all of the moral and social problems of the young people who are intrusted to his care.

The graduate college, or school of arts and sciences, sometimes called the faculty of philosophy, sometimes with coordinated faculties of pure science or of political science, requires for entrance the previous completion of the work of the academic college and provides advanced study of one or two years leading to the degree of master of arts, and yet more advanced study leading, after a total of three or more years, to the degree of doctor of philosophy. Nine-tenths of the degrees of doctor of philosophy that have been granted in the last score of years in the United States have been conferred by the 22 institutions that have been mentioned. Three institutions grant more than 50 such degrees each year; a dozen confer 20 or more—the number granted annually having trebled in the last 10 years. Two-thirds of these advanced students are in the sciences, especially chemistry, physics, biology, psychology, mathematics, and geology. The humanities, however, are well represented, especially English, the ancient and the modern languages, philosophy, history, economics, sociology, and political science. The graduate faculty is the favorite among professors; students are select and limited in number, the work is of an advanced character and closely related to the professor's most important interests; the method of procedure is so flexible in its adjustment to the subject and so intimate in its relation to the student that he may become the famulus of the professor and his devoted disciple. This faculty also has the advantage that its work is constantly subject to the test and reward of presentation to learned societies and of publication in a host of periodicals. Its professors thus may and do devote themselves wholly to productive scholarship.

The most important of the professional faculties in the universities of the United States is that of medicine, an extraordinary development having taken place in this field in the last twenty years. In 1906 there were 160 medical schools in the country. The steady improvement in standards has now reduced this number to 95, two-thirds of them connected with universities and one-third supported by State appropriations. Numerous medical schools now have equipment running into millions of dollars in value and incomes of hundreds of thousands. This development has been due largely to the strong professional spirit among physicians, made effective through organizations like the American Medical Association and its Council on Medical Education. This body, the decisions of which are generally accepted by the State boards which alone have the power to license practitioners, now approves 66 medical schools as fully meeting its requirements concerning equipment, staff, requirements for admission and curricula. The council requires the previous completion of at least one year, and recommends two years, in an academic college for admission to the four-year curriculum in medicine, which is followed by a year as a hospital interne. The schools in general more than meet the council's minimum requirement that at least six professors in each school shall devote their entire time to instruction and research—preferably the professors of anatomy, physiology, pathology, bacteriology, physiological chemistry, and pharmacology. This requirement has greatly improved the quality of medical teaching, and has greatly encouraged scientific production. Didactic teaching has almost vanished, all instruction being given in the laboratory and the hospital; and there is now a growing movement for clinical professors who shall give all of their time to teaching and investigation. The parallel development in dental education has been taken advantage of by many Latin-American students.

The development of legal science in the United States has been retarded by the detailed and complicated character of the common law. There are now 164 law schools in the country, most of them merely preparing students to pass the State examinations which admit them to practice. Here also, however, there has been a steady development, so that all reputable schools now require for admission the previous completion of eight years of elementary and four years of secondary schooling, and most schools require in addition two or three years of work in an academic college. In one-third of the law schools the curriculum is two years in length and in

two-thirds it is three years. Legal scholarship has also been aided by what is called the "case method" of instruction, an inductive or laboratory method of American invention, according to which the student himself works his way through concrete representative cases to the principles involved, and so to a fundamental and comprehensive understanding of legal philosophy. The professor who employs this method, which has become almost universal in the university schools, must necessarily give most of his time to the guidance of his students, so that the number of legal scholars has become large and their scholarly production important. In general, instruction is confined strictly to the law, the wider relations of the subject being considered in separate faculties of political science.

In engineering, similarly, the bulk of university instruction is conducted by men who give their entire time to teaching and research, although, as in law, their work is supplemented by special lectures from distinguished practitioners who give a portion of their time to teaching. The student ordinarily enters upon work in engineering after the preparation required for entrance to the academic college, and studies throughout four years, with supplementary practical work in the summers. The newness of the country, its size, and its physical characteristics, have furnished extraordinary opportunities to civil, mining, metallurgical, chemical, mechanical, electrical, hydraulic, railway, structural, and marine engineering. It is matter of general knowledge how these opportunities and those of the related field of architecture have been and are being met. The professor of engineering is fully in touch with the opportunities and the problems of the profession and is meeting them with an inventive and professional spirit that is just now being expressed in a comprehensive survey and appraisal of contemporary engineering education, with new plans for the future.

The faculty of education, or teachers college, as it is frequently called, is a recent and still rapidly developing addition to university organization. In its fullest form—and some such university schools count their students by thousands—it provides curricula leading to the bachelor's, master's, and doctor's degrees and to sundry professional diplomas and certificates. The professor who prepares students to teach particular subjects must be in touch not only with the developments in these subjects themselves, but also with the rapidly extending knowledge and constantly changing doctrine concerning the historic, philosophic, psychological, and sociological foundations of education, and, in addition, with the ever-increasing experiment and experience in the practice and administration of schools. All of these special educational subjects, moreover, have professorships of their own, filled by men who combine indispensable scholarship with extensive practical experience, which is kept constantly fresh by the large and increasing number of teachers and school administrators in active service who come to the universities for part time or summer work. Practically all professors of education give their full time to teaching and investigation. As men who are thus able to combine theory and practice are in great demand, they easily command half again as much or even twice as much salary as their colleagues in the more traditional fields; and their much desired public addresses and popular books increase their incomes still more largely. Their scholarly contribution is already conspicuous, particularly concerning the relations of school and society, the psychology of the pupil, scientific tests of school progress, and the statistics of educational administration.

Time fails to discuss the status of the professor either in the comparatively new faculties of commerce and finance, with their close relation to the industrial, mercantile, and financial life of the nation; or in the schools of agriculture, where research is supported by great sums from the Federal Government, and where single discoveries have repeatedly been the source of enormous developments in the agricultural industries; or in the schools of theology, with which the country is well supplied and which are now seeking a working adjustment, although not an identification,

with the universities; or in the dozen independent schools of philanthropy, which have a similar university relation.

All of these autonomous institutions and cooperating faculties are drawn and held together by a host of learned organizations. Academies are comparatively uncommon and separate research institutions are yet rare, although increasing. But the State, the urban, the agricultural, and the collegiate institutions all have active organizations. Each region and many States have their own associations of universities and colleges. Great bodies like the American Association for the Advancement of Science correlate varied fields of knowledge by meetings and periodicals. Each separate subject, from archaeology to zoology, has its distinct organization, and there are many associations devoted to the problems of teaching and of the teacher, among the latest being the promising American Association of University Professors. The life of the individual professor has thus a background of pleasant and profitable acquaintance with the individuality and work of his colleagues throughout the country.

The representative university professor in the United States, then, is a man of thorough training, wholly devoted to teaching and investigation, for which he is provided with large freedom and a moderate but secure income. He characteristically enjoys his intimate relation with his students and his colleagues, and his concentration in research, and he receives the most generous public recognition. The poorest men in the country vote large sums for the State support of higher education, the richest vie with one another in providing funds for the privately controlled institutions.

The public esteem in which the professorship is held may perhaps be most readily summarized from the relation that it has sustained to the presidency of the United States. George Washington planned a university, and Thomas Jefferson devoted his last years actually to creating one. The second President, John Adams, was a teacher, and his son, John Quincy Adams, sixth President, was a professor in Harvard University. Madison, the fourth President, and Garfield, the twentieth, were professors in and presidents of colleges. The present incumbent of the White House came from a university professorship and presidency, and his predecessor now occupies a professor's chair. Socially there is no better status in the land than that of the university professor.

The CHAIRMAN. I will now present Dr. Galvez, professor of English in the university of Chile, who will read to us the paper by Dr. Luis Galdames of Chile.

Mr. GALVEZ. The author is one of the principal teachers in the secondary schools of Chile. He is also one of the most prominent young authors of his country. The subject of his paper is "The aims of secondary education."

LOS FINES DE LA ENSEÑANZA MEDIA.

Por LUIS GALDAMES,

Rector del Museo Amunátegui, Santiago, Chile.

"Cuáles deberían ser los fines primordiales y cuáles los secundarios de una Escuela de altos estudios y en qué extensión deberían ajustarse sus cursos, teniendo en cuenta los requisitos de admisión a la enseñanza superior y las necesidades de la vida industrial y política."

1. La cuestión propuesta en el tema pre-inserto es una de las que tienen mayor importancia práctica en el sistema educacional de las Repúblicas latinoamericanas.

Es para ellas algo más que una simple cuestión técnica, en lo que atañe al régimen interno de sus colegios; es una cuestión de considerables proyecciones sociales, económicas y políticas. Veamos por qué.

A sus liceos o colegios, que son aquí los establecimientos de instrucción equivalentes a las altas escuelas norteamericanas, acude de preferencia—y en algunas partes casi únicamente—la juventud de las clases medias y superiores de la población, o por lo menos, es este núcleo selecto, socialmente, el que sigue los cursos hasta terminarlos. Son comparativamente pocos los hijos de la masa del pueblo que, después de ingresar en un colegio de segunda enseñanza, concluyen todos sus años de estudios en él; porque, a pesar de que su permanencia allí es gratuita—cosa muy digna de llamar la atención—las necesidades de la subsistencia les conducen tempranamente a los trabajos remunerativos con una modesta preparación intelectual.

Por eso se observa en los liceos de Chile—y estoy cierto de que lo mismo pasa en otros países americanos—el curioso fenómeno de que, por cada 100 alumnos que ingresan en ellos, sólo 10 o 12 terminan el curso completo de sus estudios que dura seis años. Como en el caso del Evangelio, “son muchos los llamados y pocos los escogidos.” Los demás van quedando a lo largo del camino, principalmente después del tercer año ya porque los reclama de lleno el trabajo, ya porque pasan a cursar estudios técnicos, comerciales o industriales, de corta duración. En todo caso, es siempre una circunstancia económica la que decide de su suerte.

Los jóvenes que terminan sus estudios en los colegios de segunda enseñanza, se dedican casi sin excepción a lo que llaman “seguir carrera,” esto es, estudios universitarios superiores. Serán abogados, médicos, ingenieros, etc.; pero no industriales, ni agricultores, ni comerciantes, ni mineros. En los negocios—si es que a ellos se dedican—conocerán, a lo más, la especulación, no la producción; y formarán de este modo, un grupo social semi-parasitario, que ni sabrá administrar ni usar bien la fortuna heredada, ni tendrá aptitudes para crear una fortuna nueva en trabajos reproductivos que incrementen la riqueza de la comunidad y permitan aprovechar la privilegiada naturaleza de estos países.

Mientras tanto, los trabajos de esta índole quedan entregados a la otra gente que sólo ha pasado por la escuela primaria, o durante un corto período por el liceo, o que ha cursado ligeramente estudios técnicos, gente de escasa preparación especial, desprovista por lo común de aptitudes para dirigir y a veces hasta para servir ajenas empresas, falta de recursos materiales para acometer empresas propias, sin iniciativas fecundas y sin horizontes para después; porque en ninguna parte encuentra estímulos suficientes que la induzcan a una sostenida acción práctica.

Los fracasados en estos trabajos y los fracasados también en las profesiones superiores, dichas “liberales,” van muy pronto a buscar refugio en el presupuesto fiscal y contribuyen con empleos inútiles, cuya creación gestionan con impaciencia, a recargar exageradamente los gastos públicos de su país, de manera absolutamente irreproductiva. Nuestros viciosos hábitos políticos estimulan, por su parte, esa tendencia. Es así, pues, como se genera, se sostiene y se expande el mal social que entre nosotros llamamos “empleomanía,” fruto de la escasez de empresas productoras, causada a su vez por la incapacidad económica de las clases dirigentes.

Dada esta situación, se comprende que el colegio de enseñanza secundaria ha debido ser más bien un estimulante que un correctivo de esa funesta inclinación al trabajo estéril considerado colectivamente; porque, destinado, según el criterio dominante, a proporcionar la cultura general, científica, literaria, estética y ética que todo hombre de una civilización superior debe poseer, no ha podido preocuparse especialmente del aspecto económico y social de sus funciones.

Así se explica, a la vez, que la enseñanza secundaria haya atravesado en el último tiempo, tanto en Chile como en otros países americanos y aún europeos, por un período realmente crítico, en lo relativo a su eficacia y a su finalidad.

Consagrada de preferencia a formar hombres cultos, en contacto con la literatura y con la ciencia actuales, se ha dicho, no ha logrado más que parcialmente su propósito, ya que es tan escaso el número de los que la aprovechan en su integridad, y en cambio, ha descuidado el aspecto económico que debió prevalecer en su organización y ni siquiera ha sido más feliz en lo que se refiere a la educación moral y cívica de las generaciones que ha tenido a su cargo.

Escasísimos hombres de ciencia, escritores de muy discutible originalidad en su mayor parte, políticos teóricos, nutridos algunos de vastos conocimientos: he ahí lo mejor que ha producido esa enseñanza en combinación con la de grado superior; pero hombres casi todos divorciados de la realidad, que apenas si se dan cuenta, a través de libros extranjeros, por sugerencias de lecturas exóticas, de las necesidades primordiales y de los problemas más hondos del país en cuya dirección participan. Y debajo de ellos, una masa enorme de inadaptados socialmente, incapaces de ganarse la vida en el rudo campo de las actividades prácticas, proletarios instruidos que sólo alcanzan a ver en los negocios públicos la parte de beneficio personal que pueda corresponderles, siempre dispuestos a defender todas las situaciones y a amparar todas las inmoralidades, con tal de que ellos puedan conseguir algún medro.

Bajo la presión de semejantes críticas—en las cuales conviene advertir que hay algo de exageración—la enseñanza media ha debido evolucionar, como en efecto lo ha hecho en los principales países sudamericanos, en el sentido de satisfacer, siquiera sea parcialmente, las exigencias de carácter económico y cívico que se presentaban a su consideración con claridad y con fuerza irredarguibles.

Es así cómo los colegios secundarios de Chile que el Gobierno mantiene y que son la casi totalidad, han variado sus métodos, haciéndolos más racionales e intuitivos, han dado mayor amplitud al estudio de las lenguas modernas, han perfeccionado y extendido la enseñanza de la caligrafía y el dibujo, han dedicado particular atención a la educación física, a la higiene y a la formación del carácter, han dado lugar preferente a la geografía y la historia nacionales; y en fin, han introducido en los últimos años las artes manuales en sus programas, a la vez que la educación cívica, proyectada sobre la vida económica y práctica.

¿Quiere decir lo expuesto que la evolución sea completa o que esté siquiera por completarse? De ningún modo. Eso significa solamente que está en vías de realización y que las modificaciones metodológicas y orgánicas que se han efectuado no han hecho más que prepararla.

No es ésta, sin embargo, empresa fácil; porque la cuestión de saber cuál es la misión propia del liceo, en los países latinoamericanos, lleva envuelta la cuestión mucho más compleja de saber cuáles son los fines sociales a que estos colegios deben adaptarse; ya que la educación, en cualquier grado que se la considere, no es más que un proceso de adaptación a las necesidades de un lugar y tiempo determinados.

2. La relativa esterilidad de que a la segunda enseñanza se ha acusado en estos países, proviene de la desnaturalización de sus fines. De enseñanza general o preparatoria para la vida, se la ha convertido en enseñanza especial o preparatoria para las carreras universitarias. Y como estos estudios superiores exigen para iniciarlos cierta base indispensable de conocimientos científicos, literarios y prácticos, el colegio de segunda enseñanza ha debido organizar su trabajo en armonía con esa exigencia extraña a su propia finalidad.

Que la segunda enseñanza no es, como su mismo nombre lo indica, más que una continuación, o para hablar con más propiedad, un perfeccionamiento de la primera; y que, en consecuencia, el liceo no es más que una escuela primaria ensanchada, nadie lo pone en duda; pero, no obstante de aceptarse que la escuela tiene un fin propio, como es el de preparar al individuo para una vida consciente y laboriosa, cuando se trata del liceo no se reconoce sin vacilación que su fin principal consiste también en preparar al individuo para una vida análoga, con la diferencia de que en este último caso se persigue a la vez el propósito de formar al ciudadano culto que

va a componer las clases directrices, o por mejor decir, los elementos motores de la sociedad.

Se trata, pues, de funciones diversas de un mismo organismo, que es la educación; pero funciones de la misma especie, que sólo divergen en grados. Son, en fin, dos círculos, de los cuales el uno queda dentro del otro. El hecho de que el joven que ha terminado su segunda enseñanza siga o no estudiando una carrera profesional científica, no tiene por qué influir hasta tal punto en la organización del colegio, que lo obligue a subordinarse por entero a las exigencias de ésta; porque cuando se va tras el anhelo de proporcionar una educación amplia, es decir, una sólida preparación para la vida real, cualquiera que sea la actividad en que el individuo la emplee, las miras profesionales traspasan los límites de esta labor.

Si alguna mira profesional hubiera de tener esa educación, ella no sería otra que la genérica ocupación de hombre y ciudadano, como factor útil de la colectividad en que ha de vivir.

Subordinar, pues, el liceo a la universidad, importa crear a aquel una situación absurda; sería una rama entera de la enseñanza que carecería de fines propios y que sólo tendría derecho a existir a modo de pasadizo para otra de más categoría, pero extraña a ella.

Casi parece innecesario para nuestro objeto el señalar las consecuencias que naturalmente fluyen de tal situación. Bastará observar, a este respecto, que todo lo que no concurre en nuestros colegios al mayor aprovechamiento de los estudios y a la asimilación más perfecta y completa de los ramos científicos y literarios que llenan sus programas, ha debido relegarse a segundo término, cuando no abandonarse sin piedad, en obsequio a las materias del plan concordante con los cursos universitarios. Circunstancias locales y características profesionales de índole especial, agravan más aún, en cada país, las consecuencias expresadas.

Se impone, pues, la necesidad de reivindicar para el liceo los fines propios de cultura general y social que debe cumplir; y la renovación de sus planes de estudio, en el sentido de adaptarlos cuanto sea posible a las exigencias de la vida de hoy, es la primera medida indispensable.

¿Cómo se verificará esa adaptación? Es lo que paso a contestar.

3. El pensamiento dominante en la reforma de los estudios de la segunda enseñanza deberá ser entre nosotros la mejor habilitación del individuo para una intensa vida de trabajo productivo y de acción social. No es que se trate de convertir el colegio secundario en una escuela técnica, con miras hacia una profesión determinada, ni siquiera hacia un grupo de profesiones, como ocurre hoy con las llamadas "liberales," sino de proporcionar al niño los conocimientos más indispensables para poder consagrarse después con provecho a cualquier género de ocupaciones que representen un factor de progreso económico.

Y decimos lo anterior, porque desde el momento que la estructura social entera descansa hoy sobre una base de esta especie y el poder expansivo de un país se mide más por la intensidad que por la cantidad de la producción, es imposible desentenderse de la importancia preponderante de ese factor, y porque, además, la profesión usual, la profesión humana por excelencia, ha llegado a ser la del trabajo eficiente en su aspecto económico. Si esto es una verdad en cualquier país de nuestro tiempo, llega a ser un lugar demasiado común en las Repúblicas latinoamericanas, cuya raza y cuyo suelo apenas principian a entrar en el concierto de las potencias productoras.

Pero no se trata de formar solamente al hombre culto y laborioso; trátase, a la vez, de formar al ciudadano de una democracia, poseído sobre todo de un amplio concepto de sus deberes cívicos y de sus deberes sociales; y trátase más aún, de formar al hombre y al ciudadano de naciones nuevas, que ni siquiera han fijado todavía su definitivo tipo de raza ni asimilado todos los elementos de la civilización contemporánea. Corresponde también, pues, a la enseñanza secundaria el desarrollar una poderosa labor de nacionalidad y de asimilación civilizadora.

Aparte de estos fines morales y económicos, todavía cumple a los liceos satisfacer la misión de cultura científica, que ahora constituye su fin principal y del que no sería posible ni conveniente relevarlos. Pero bien entendido que aquellos son los fines propios de la segunda enseñanza, los fines que podemos llamar primordiales y que este último que se refiere a la cultura científica, no viene a ser ya más que un fin complementario o secundario, si así se prefiere denominarlo.

Esta labor científica es la que está destinada a establecer la continuidad de la enseñanza, desde el grado secundario al grado superior o universitario. Y como continuidad no significa dependencia, sino relación o engranaje, en nada se perturba ni deprime la independencia que para los fines de la enseñanza secundaria hemos reclamado, en frente de los estudios superiores.

A primera vista parece un tanto difícil de conciliar los fines morales y prácticos de la segunda enseñanza con el fin científico complementario que le hemos señalado. Sin embargo, ello es sencillo y hacedero. Sólo consiste en dividir el curso completo de las humanidades, como se designa al conjunto de los estudios secundarios, en dos "ciclos" sucesivos, uno de cuatro y otro de dos años, por ejemplo. Y digo, por ejemplo, porqué el número de años que deba durar la segunda enseñanza depende de lo que haya durado la primera. Hablo, a lo menos, por lo que toca a Chile, al mencionar el curso de seis años.

El primer ciclo de cuatro años sería el llamado a realizar los fines propios de la segunda enseñanza; miraría, por consiguiente, hacia las profesiones económicas, hacia la formación moral y el completo desarrollo físico del educando; aspiraría, en suma, a formar al hombre común, al ciudadano culto y activo, al individuo eficiente como factor social. El segundo ciclo de dos años se orientaría hacia la cultura científica, en concordancia con las exigencias mínimas de la iniciación de los estudios universitarios; tendría por principal objeto el trabajo individual de gabinete o biblioteca y el aguzamiento de las facultades de observación y experimentación; serviría, además, a aquellos jóvenes, en esta parte del mundo todavía muy raros, que sin mira utilitaria alguna, por mera afición, quisieran ensanchar o perfeccionar tales o cuales conocimientos.

La forma de dar la enseñanza sería muy diversa en uno y otro ciclo: en el primero esencialmente práctica y en el segundo esencialmente científica y experimental.

No parece del caso indicar el contenido de los programas de estudio, ni el plan detallado que convendría seguir; porque, no depende la eficiencia de esta enseñanza tanto de los ramos o materias que abarque como del espíritu con que se enseñe y del método que se emplee. Además, las asignaturas o ramos de estudio son los mismos en casi todos los países cultos; solo su desarrollo varía según las tendencias dominantes en su organización docente.

Para facilitar más aún el engranaje de la enseñanza secundaria con la superior, bien podría dividirse el segundo ciclo en dos secciones, en concordancia con los dos tipos generales de organización mental: una Sección de Matemáticas y Ciencias Naturales y otra de Filosofía y Ciencias Sociales. Más facilidades se ofrecerían también al estudiante y más eficacia se lograría a la vez en los estudios, si a lo largo de ambos ciclos se agregaran, al lado de los ramos de curso obligatorio, otros ramos de carácter optativo o electivo, que darían a la enseñanza una marcada tendencia vocacional.

Lo esencial, sin embargo, es dejar establecido que la división propuesta es perfectamente realizable y que ella es, si no el único, a lo menos el medio más acertado de conciliar los fines propios de la segunda enseñanza con sus fines complementarios de preparación para cursar las diversas especialidades del grado superior.

Las consideraciones anteriores parecen suficientes para servir de fundamento a las siguientes conclusiones:

CONCLUSIONES.

1. La cuestión de los fines primordiales y de los fines secundarios o complementarios de la enseñanza media, tiene en los países latinoamericanos una importancia más que

técnica: económica, social y política, porque se relaciona íntimamente con las faltas más comunes de su organización como colectividades civilizadas.

2. Los colegios de segunda enseñanza tienen fines propios e independientes de la enseñanza superior y no hay razón alguna suficiente para mantenerlos subordinados a esta última, sino es en orden a la continuidad gradual de los estudios.

3. Los fines propios o primordiales de la segunda enseñanza consisten en la preparación de la juventud para una eficiente acción económica y cívica, dentro de su respectiva colectividad, preparación que, sin revestir carácter tecnológico de ninguna especie, conduzca a quienes la adquieran hacia las actividades útiles individual y socialmente.

4. Los fines secundarios o complementarios de la segunda enseñanza dicen relación con la cultura científica de los educandos, en la medida y forma que ella sea necesaria para el engranaje o correlación de esta rama de estudios con la universitaria o superior.

5. El medio más recomendable para conciliar y fundir en un solo cuerpo de estudios estas dos funciones del colegio de segunda enseñanza—la una que se dirige hacia la vida económica y política y la otra que se refiere a la cultura científica—es la división de sus cursos en dos ciclos: uno que podría durar cuatro años y que sería el destinado a la preparación del individuo eficiente desde el punto de vista económico y cívico, y otro, que podría durar dos años, y que sería el destinado a dejar al estudiante en aptitudes para iniciar cursos superiores o universitarios. Este último podría sin inconveniente y aún con ventaja, subdividirse o bifurcarse en dos secciones, en las que podrían agruparse los ramos de las ciencias exactas por un lado y los de las ciencias sociales por otro.

6. Ramos especiales de carácter electivo u optativo, distribuidos a lo largo de todos los estudios, darían más eficiencia a la acción educativa del colegio, estimulando la aptitud vocacional.

The CHAIRMAN. There are two papers remaining on my desk which are included in the program for to-day. The paper by Dr. Gallegos is, however, an address not prepared primarily for this audience, as it is marked "to the American Association of Dental Faculties." Unless there is objection, this might follow the course of being read by title, as the hour is late, and that would make it a part of the proceedings.

Perhaps the same course may be taken with the paper by Dr. George B. Winton, of Vanderbilt University, who has been unable to attend our meetings. Without objection these two papers will be read by title and will be made a part of the proceedings.

AMERICAN DIPLOMAS ABROAD.

By FELIPE GALLEGOS,

Secretary of the Faculty of Dental Surgery, Costa Rica, Central America.

The Pan American congress should have for an object not only scientific research, but the opportunity for acquaintance and conference of the dentists of the three Americas. It is a known fact that the United States has given to the world a larger number of dentists than any other country. All over the world the reputation of the American dentist has been high. Will this continue to be so?

There are many countries in Central and South America where dentistry is not taught; but as laws pertaining to the practice of dentistry are becoming more rigid,

persons wishing to learn and practice dentistry have to go to the United States or to England to get their professional education. As far as the United States is concerned, the high standard requirements adopted by the American Association of Dental Faculties on one hand, and the strict examinations of the State dental boards on the other, have made it very difficult for the unworthy to practice in the United States. And so, the remedy for which I ask is not for conditions in the United States, but for those in Central and South America and for the world at large.

It seems to me that there ought to be no other dental colleges in the United States than the State colleges, or those that have endowment funds large enough to make them independent institutions and important centers of learning. I do not understand why the laws of the United States permit low-standard colleges to exist there; and worse, those so-called night or correspondence schools of dentistry—institutions that offer degrees in a short term. Quack dentists with very little practice often start these low-grade colleges and send abroad a flattering prospectus offering all kind of inducements to become a D. D. S. in a few months and for a few hundred dollars, with a few dollars more for a gold-lettered diploma—a very pretty thing, indeed, full of birds and flowers—and an honorary membership in some mythical association. Of course, their products are not intended for the United States but for exportation—to the far south. The thing works so well that the college has a public notary who certifies that the signature on the diploma is legitimate, and the one that is used by dean and professor, Doctor Cheap-Jones. Then also the local authority certifies that the college exists in such city and State. Armed with such diplomas the *one-season* doctors are ready to fly all over the world with an American diploma duly identified by the United States authorities.

I do not know if the American Association of Dental Faculties can do anything to stop the evil practice. I suppose that legislation ought to be enforced to regulate those centers in which *business* is first and *science* last. If it can not be stopped, at least I suggest that the American Association of Dental Faculties, taking the matter in hand, might send through the American secretary of foreign affairs a note to each and every one of the Governments of Central and South America giving a list of all the standard dental colleges; also to Cuba, Mexico, etc. Perhaps that would be a deathblow to the disgraceful institutions which could no longer export their products. The communication, having been published, would also furnish to young men a list of standard colleges from which to select their alma mater, and would also be a warning to the public in general. Finally, the list would be a kind of test stone should any such quack diplomas be presented for recognition.

EXCHANGE OF TEACHERS BETWEEN MEXICO AND THE UNITED STATES.

By G. B. WINTON,
Vanderbilt University.

Perhaps no two peoples in the world who are so near together are as little acquainted as are those of Mexico and the United States. This is all the more noteworthy when it is considered that they are separated by no physical barrier, that their political institutions are similar, that their products are reciprocal, and that for 70 years they have been at peace with each other.

What can explain so anomalous a situation? I make no formal attempt to do this, only noting in passing two facts: First, that each of these peoples has been much preoccupied with its own affairs, the development of its institutions and of its natural resources; and, second, that the barrier of language has been a serious one. Inadequate means of transportation furnished till recently a third obstacle. My concern,

however, is not so much with accounting for as with seeking to obviate this undesirable estrangement. In recent years the whole world is drawing together. Amicable relations between different peoples are coming to be the rule. There are a thousand reasons why the several nations of the two Americas should be on good terms with each other. The interests which they have in common are far more numerous and important than those which they do not mutually share.

And if in general it is to be desired that nations shall be acquainted, reasons still more numerous and urgent present themselves for the drawing together of those that lie side by side. If peoples near together can not become friends, those that are widely separated will find it all the more difficult. As between Mexico and the United States there are many considerations besides mere proximity, which urge the promotion of friendship. Perhaps the greatest of these is that each of these countries is prepared to supply the other with numerous products, natural and manufactured, which can not so readily be had at home. Mexico needs the machinery, the dry goods, shoes, furniture, drugs, paper, steel, railway cars, farm implements, etc., of the United States, while this country will supply an insatiable market for the live stock, hides, ixtle, silver, copper, rubber, coffee, vanilla, chocolate, chicle, fruits, and spices, with which Mexico overflows. Commercial relations between the two nations will thus prove largely reciprocal, and these relations depend much upon the development of contact and good will between the two peoples.

There are assets of a moral kind, also, which should not be overlooked in dealing with the matter of international exchange. It is evident at once that in some particulars the people of the United States have more rapidly solved the problems of self-government than has been possible to Mexico. Due to this the northern nation has made advances in the task of educating the whole people and in raising the standards of living which may well serve as example and stimulus to its neighbor on the south. Yet in artistic feeling, in the rich inheritances of an ancient civilization, the fine art of social converse, not to mention other phases of her national life, Mexico has her own capital. She is prepared to give as well as to receive.

There is perhaps nothing that will more rapidly promote the better kind of international acquaintance than frequent exchanges between the teachers and students of the two countries. Let teachers and students go from the United States to Mexico, and let them come from Mexico to the United States. It is these people of the college halls who will see most, understand best, and transmit most justly the results of their observations. They are used to the atmosphere of truth and of freedom. They will lack neither frankness nor sympathy. And having acquired information and insight they are better situated than any others to convey these to their fellow citizens. The students for their part are the predestined leaders of their generation. That they are pursuing advanced studies marks them as young people of force and initiative, and their native forcefulness will be augmented by these same studies. They are sure, therefore, the majority of them, to reach when mature positions of special advantage and influence among their fellows. Their views and their opinions will be of weight.

As for the teachers, they have the youth of the country in their hands. They will make the coming generation. Whatever it becomes, it will largely be their work. If Mexican teachers are friends of the United States, informed as to what is best in our life and sympathetic with our national ideals, nothing is surer than that the next generation of Mexican men and women will inherit those favorable concepts. If, likewise, the teachers of the United States once inform themselves concerning Mexico, that land of enchantment and of beauty, if only they become acquainted with the Mexican people, and learn the story of their gallant struggle for liberty, self-government and progress, if they acquire and use the melodious language of Cervantes and Calderón, their students can not fail to grow up with a sense of admiration and respect for their nearest neighbors and for the beautiful country which is their

home. Has this situation yet been realized? Do the teachers of either country really know the other? Are the young people being trained in a temper of mutual regard and kindness? To all these questions there is but one reply, a sad negative. A little exchange there has been in the past. A few pedagogues have crossed the dividing line and later returned with a new esteem for their neighbors. But the movement has been individualistic and almost insignificant. Within very recent months the new Constitutional Government of Mexico has sent several scores of teachers to the United States for a brief period of study and observation. It is said that this will continue to be a policy of that Government. It is one to be applauded, and it should be reciprocated by similar official action on the part of the northern Republic.

With these words by way of introduction, my purpose is in this paper, first, to outline briefly certain advantages that I believe would flow from a general interchange of teachers—and students also, though I am primarily concerned with teachers—between Mexico and the United States, and, secondly, to point out some means of making possible and practicable that interchange.

I. Subdividing again under the first of these topics, I shall mention, first, the general advantages to be expected, and, secondly, those personal to the teachers themselves.

1. (a) Of general advantages, that which comes at once to the foreground is the promotion of language study. In Mexico English should be studied, in the United States, Spanish. Teachers who go from one of these countries to the other will themselves be forced to make a new and thorough study of the language of that country. Their presence there in an institution of learning will arouse interest in and promote the study of their own tongue. Thus the knowledge of the two languages will be far more widely diffused than now. This is so inevitable that it is superfluous to urge the point. These two languages have as much of cultural value as any others of the modern languages; hence the study of them might well be an end in itself. But such study will have also a special practical value so soon as any general interchange of teachers and pupils between the two countries becomes effective.

(b) The immediate result of an increase in the common knowledge of the national languages will be an extension of the commercial and social relations between the two peoples. The principal reason why commercial intercourse is not more extended between Mexico and the United States is not lack of proper transportation facilities, not the want of adequate banking arrangements, not the difference in modes of doing business as to credits, profits, etc., but always, and far outweighing all these, the barrier of language. There are more Mexicans who know English than there are Americans who know Spanish. But they are not many at best. If a merchant in either country should wish to open up trade relations with one in the other, or if an individual should wish to make an order for goods, the first and chief obstacle in his way is this same matter of the language. He can not read the circulars, advertisements, and catalogues of the house with which he would deal. He can not write them a letter that would be intelligible, or read their reply to one written for him. The difficulty is so immense that in far too many cases he simply surrenders to it, and gives up the idea altogether. All the other difficulties would adjust themselves if this were removed. The means of transportation would develop, banking facilities would be provided, and methods of business would be harmonized. But so long as Mexican and American must say, in the words of Holy Writ, "I shall be unto him that speaketh a barbarian; and he that speaketh shall be a barbarian unto me," how can any of these desired improvements be promoted? Spanish should at once become a required study in the public schools of the United States, and English in those of Mexico.

Social intercourse is, of course, quite as dependent on a knowledge of language as is commerce. More people would travel if they could make themselves understood and thus get about more easily. And if there were more of travel and of friendly

visiting between the peoples of the two countries, there would inevitably be more of mutual respect and esteem. Social intercourse and business intercourse would blend, and each would promote the other.

(c) In the same way, this augmented intercourse and contact between the two peoples would infallibly steady and confirm peaceful political relations between them. It would be alike a calamity and a disgrace if Mexico and the United States were to go to war. They are neighbors and have long been friends. Both are Republics, working out each in its own way the common problems of self-government and national well-being. On neither side is there any desire for aggression. Should such aggression at any time be urged and promoted by small and interested groups of citizens, there should be so wide and intelligent an appreciation for the neighbor nation on the part of the citizenship in general that such evil designs shall be at once brought to naught. For that nothing is really needed but a better acquaintance. When these two great peoples come really to know each other, they will not fight. One ventures this prophecy with a sense of firm security. There is too much that is noble and good in each, the ideals cherished and the ends sought in both are too nearly identical, for the thing ever to come to pass, except purely on the basis of ignorance and misunderstanding.

If therefore, it can be thus plainly and logically shown that an interchange of professors will lead to guaranteeing good relations between these two great nations, such an exchange may properly be urged, and it may even be promoted by the two Governments as a proper political and diplomatic enterprise.

2. Coming now to the advantages that will accrue to the teachers themselves, one finds himself beset by a multitude of them. As a humble representative of that group of public servants, the writer begs leave to idealize, to give wings to his fancy. If these things never come to pass, that will be for us teachers only one more of those numerous disappointments to which we are accustomed. But in any event, the dream is a true one, though it be never realized.

(a) First of all is the thought of recreation through travel and observation. As I have intimated above, while many people travel abroad, and teachers do so but little, it is yet the teachers who when they do travel get the most out of it. They are trained observers. Rocks and trees, hills and flowers, speak to them. Methods of farming, types of buildings, the dress and habits of people, the products, natural and artificial, of any section—all this has a language for them. Their human sympathies have been broadened. *Nihil humanum alienum* has become their motto. In their books they have companied with the Greeks and the Romans. Their studies have made them live over again the struggles of other peoples to be free. Their spirits are alert, ready. Freedom from the four walls of the schoolroom fills them with youthful fire. They breathe in vigor and inspiration with every breath. Will they not profit by travel, by social contact, by conversation, by observation, by change of scene? Who more?

(b) Again, they will secure a very practical, even a professional, advantage through the real mastery of English or of Spanish. It is not sufficient to cull laboriously from a textbook enough of either of these great languages to read its literature or to instruct in it a halting class of beginners. That is not to know Spanish, to master English. But when one lives with a nation's speech, hears it all day, dreams it by night, is washed by its insistent tides, bathes in its depths, absorbs its flavor, tastes its idioms, laughs at its absurdities (all languages have them) for a whole year, or for two years together, the language will never be the same to him again. He feels that now he is at least beginning to know it. It has become a part of him. If he teaches it again, his work will never be dry or dull or perfunctory. He will be conscious always that he is handling a living thing.

(c) He would be but a poor sort of a pedagogue and not much of a patriot who would insist that the schools and the mode of teaching of his own country are the best possi-

ble, that they can not be improved. This is not a sin of the average teacher. He is, on the contrary, a relentless critic. He analyzes everything. He examines himself, and not unfrequently dissects his neighbor, with merciless minuteness. He changes textbooks; he alters methods; he tries experiments. He is ever learning and never content. Therefore, when he goes to another country he will be busy studying, comparing, criticizing, appropriating. If he finds there a school system, scholastic methods, ideals, standards, modes of teaching, discipline, etc., differing from those of his own country, he will set to work to appraise them. If they appeal to him as better than his own, he will seek to adopt them. In this way the school system of one country will be corrected and modified by that of another. As the wisdom of all is greater than the wisdom of any, this process is sure to result in the improvement of both systems. Pedagogy, as an applied science, at least, has not yet reached a state of perfection. None of us are so foolish as to fancy that no improvements in our schools are any longer possible.

(d) This development of national school systems by contact and comparison with other such systems, through the international exchange of intelligent scholastic leaders, will constitute an element of strength for the schools and for their teachers. They will thus become a point of contact for one nation with another. Neither politics nor commerce, being, as they are, essentially selfish in motive, nor both of them together, should be allowed to set the type of the mutual relations between neighboring nations. Let there be brought in rather the just, the broad, the altruistic atmosphere of the academic circles. This will be good for the nations and will be good for the schools. In particular it will strengthen the position of the teacher in society, and give weight to his opinions on matters outside the schoolroom.

II. I come now to treat of the practical, that is to say, the economic, side of this subject. The pedagogue is proverbially poor. If he voyages to other countries for a longer or shorter stay, some provision must be made to meet the expense. Here, as in other branches of our subject, it is easy to give wings to fancy. Idealistic plans may be laid out by the most impecunious. Let us see.

1. There is language teaching, first. Spanish and English alike ought to be taught by "natives." There is no other sure way of conveying a correct accent. Spanish is increasingly popular in the United States and English in Mexico. The demand for these courses will increase and not diminish. They will cease to be confined to colleges and become a part of the work of high schools and even of grade schools. Now, why should it not be the rule instead of the exception to secure Mexican teachers of Spanish in the United States, and American teachers of English in Mexico? On the basis of a three years' contract, many teachers, unmarried teachers, especially, could venture to meet themselves the expense of travel, even out of the none too liberal salaries now set apart for these departments. The Federal Bureau of Education, or the educational departments of the separate States, might, in each country, lend their services as a sort of clearing house for arrangements of this kind. Teachers desiring to make the experiment of a foreign tour could then register, have their qualifications certified, and be placed in correspondence with the institutions desiring instructors.

2. In both Mexico and the United States there are expert instructors in certain special branches outside the realm of language study. Courses of lectures by such specialists might be arranged on the basis of foundations which already exist in many institutions for such courses. Temporary appointment to adjunct professorships or as departmental lecturers would open the way for visits that might prove of transcendent importance, both to the institution and its students and to the visiting teacher. In many instances it might well be possible for these arrangements to be made reciprocal between institutions in the different countries.

3. In the third place, teachers on leave might, for a small compensation in addition to their stipend, arrange to spend their time where they could give courses in

their special department of work. It would seem that in history, mineralogy, geology, biology, sociology and economics, as well as in the modern languages already mentioned, the teachers of Mexico might well spend their rest time in the United States, and those of this country in Mexico. They could thus combine business and pleasure. The institutions encouraging such visits by supporting their teachers when absent would secure their returns in their increased efficiency and in the advertising which the institutions themselves would get through the scholarly labors of their representatives and their own generosity in making possible these wider activities.

4. Finally, in these days of liberal contributions to all kinds of educational and philanthropic enterprises, is it unreasonable to expect that some individual or corporation will be found who will promote this international exchange of teachers by establishing special endowments? Could not even the Governments well afford to make appropriations for such exchange professorships? It seems to this writer that the advantages to accrue from promoting so worthy a cause are sufficiently manifest and sufficiently inevitable to forestall any justified criticism of such appropriations. As for the private and special endowments, it may be remarked that while so much of interest is being shown and so much of money is being expended in the effort to promote international peace, it would seem that a measure to that end so simple and so practical as this would not continue to be overlooked.

Adjournment.

SESSION OF SUBSECTION 10 OF SECTION IV.

PAN AMERICAN UNION,
Monday afternoon, January 3, 1916.

Honorary Chairman, His Excellency The Minister from Costa Rica, Manuel Castro Quesada.

Chairman, Albert A. Snowden.

The session was called to order at 2.30 o'clock by the chairman, who announced the following program:

Special schools of secondary grade: *raison d'être*; character and method of instruction:

Commercial High School, by William Fairley.

Young Men's Christian Association, by Edward L. Wertheim.

Cooperation, by William Jennings Bryan.

THE SUCCESSFUL COMMERCIAL HIGH SCHOOL.

By WILLIAM FAIRLEY,

Principal, Commercial High School, Brooklyn, N. Y.

I. THE PLACE OF COMMERCIAL EDUCATION.

The most striking recent development in public secondary education in the United States of America has been that in the department of training for commercial work.

II. REASONS FOR THIS.

This development has two causes; arising, first, from the demand in behalf of that vast number of our secondary students who can not go to college for a training which shall fit them for practical business life; and secondly, from the demand of business men for young people in their offices and stores who have learned at least the rudiments of the fundamental business operations.

Many of us can remember the time when the self-made, prosperous business man declared that he wanted the boy unspoiled by high school or college; when he said that the best years for learning a business were those which immediately follow the grammar school age. But competition is keener now, and the opportunities for the raw boy are fewer for that reason. He must compete not with a generation on a level with himself; but with the older men who have won their way and are past masters in business. And the veteran business man has been forced by the excellence of the work done in our commercial schools to recognize that their product furnishes him with young helpers who are more serviceable than the untrained child of 14 can be. The result is that every first-class commercial school is called upon by the world of trade for a far greater number of graduates than it can possibly turn out.

III. PROPORTION OF COMMERCIAL STUDENTS.

The report of the Commissioner of Education for 1913-14 shows the following ratio of commercial pupils to entire secondary enrollment:

	Total enrollment.	Commercial enrollment.	Per cent.
North Atlantic Division.....	376, 279	82, 116	22
North Central Division.....	492, 045	48, 267	10
South Atlantic Division.....	85, 724	6, 542	8
South Central Division.....	128, 053	5, 688	4
Western Division.....	136, 703	18, 737	14
New York City (1914).....	66, 696	19, 389	29

These figures show very clearly that commercial education is in demand very nearly in proportion to the business activity of the several sections. New York City naturally leads.

IV. PUBLIC VERSUS PRIVATE COMMERCIAL SCHOOLS.

The private business school has its own deserved place and mission. It is for those who can not possibly spare the longer time required by the public high school. Its work, extending ordinarily over a period of six months, and seldom over more than a year, is narrowly technical, and likely to be efficient as far as it goes. It necessarily lacks foundation and breadth, as compared with the course of the public school. The latter holds its pupil (unless he drops out, as too many do) for a minimum of two years; oftener for three; and in the best schools, for four years. And it aims to give him, in addition to a solid grounding in the essentials of business procedure, some broad preparation for citizenship and for a profiting by the best things in life.

V. COMMERCIAL DEPARTMENTS AND SPECIALIZED SCHOOLS.

Commercial work in public schools started as a mere elective among other courses. As the work expanded it was at first organized into a special department of the general school; and the latest development has been that of the school devoted wholly to commercial training. Of course the special commercial school is possible only in larger cities. But where it is possible it is highly desirable.

This is so for a rather unflattering reason. That reason is a popular disesteem of commercial courses. Even if a boy has no hope or wish to go to college it is often deemed more respectable to take a general course than a commercial one. And, as a matter of fact, the weaker type of students, on the whole, have sought the commercial courses. When a boy has failed in Latin or algebra he has been told that he is too stupid for academic work, and that his proper place is in the commercial department. Grammar school principals have been known deliberately to shunt their less promising pupils to the commercial departments or schools. Thus the fact is at present undeniable that our schools and departments of commerce have very largely been fed with the less energetic and intelligent. Now the commercial department of the general school has been peculiarly unfortunate in this sort of discrimination. It has too often been made a haven of refuge for the incompetent. On the other hand the special commercial school stands more squarely on its own feet; its program and its methods are its own, and are not constantly being contrasted, disadvantageously, with the academic.

But the commercial school will never come fully into its own until parents and pupils recognize that it is a strenuous workshop; that its courses are not soft and easy; and, perhaps most important of all, not until its teachers are of as high class as those of the

academic branches and its subjects as well taught as these. The classics, mathematics, history, and the sciences have well grounded and approved methods underlying them; for the most part the work in these lines is controlled and tested by college entrance examinations; in short, the academic work is well standardized. Such standardization is as yet lacking in commercial work. And it is sorely needed. A separate treatment will be given later on to the preparation of the commercial teacher.

VI. DIFFERING REQUIREMENTS FOR BOYS AND FOR GIRLS.

Until the time shall come when all distinction between the work of men and women shall have vanished girls preparing for business will require a treatment different from that of boys. In the main and for the near future at least, the girl will be preparing almost exclusively for the kind of work distinctly recognized as clerical. She is not, save in the exceptional case, destined to be a manager or an executive. The boy, on the other hand, while he may serve as a clerk for a time, is expecting and is expected to rise through that stage to the managerial type of work. For him, then, there is the demand for less stress on the clerical instruction and for more on the broader aspects of business. It is desirable, therefore, that courses and, if possible, schools for boys and for girls be differentiated.

VII. THE PURPOSE OF A COMMERCIAL SCHOOL.

These may be thus stated:

- A. To fit young men and women for the simpler clerical duties. This is the commonest type.
- B. To fit the more earnest and capable to grow into controllers rather than recorders of business affairs.
- C. To prepare those who wish to do so to enter the commercial courses offered by some of our universities.

VIII. THE COURSE OF STUDY.

A. The length of the course. Many short, two-year courses are offered. The most common type is a three-year course. The best schools offer a four-year course. And in view of the subject matter undertaken and the aim in view this is none too long.

B. What should a commercial school teach?

As already indicated, the full commercial course should embrace far more than the traditional penmanship, arithmetic, spelling, letter writing, bookkeeping, stenography and typewriting. These prepare only for subordinate clerical work. They are essential, most of them, for the majority of students. But they are only a beginning. Remembering of course that we are dealing with boys and girls of from 14 to 18 years of age, there is need of such other studies as shall give them as broad an outlook as possible into the world of men and of affairs. An unfortunate distinction is sometimes made in commercial schools between academic and commercial work. With the possible exception of music, there should be no subject in a commercial school which is not regarded as having a bearing on the future life of the business man; no subject which may well be slighted in the student's estimation because it is not practical. There must be some subjects which will have only an indirect bearing on office procedure; but will have a powerful influence on general intelligence and capacity for seizing and solving problems. Moreover, every business man is to be a citizen as well. The things that make for citizenship have their place as truly in the commercial as in the academic school. As will be shown later it is this very breadth of training offered by our better commercial schools which the business world is fast learning to value and to demand.

C. Some typical courses:

High School of Commerce, Cleveland, Ohio.

BOYS.			GIRLS.		
FIRST YEAR.			FIRST YEAR.		
Subjects.	Periods per week.		Subjects.	Periods per week.	
English.....	5		English.....	5	
Mathematics.....	5		Mathematics.....	5	
Commercial geography.....	5		Botany and physiology.....	5	
Penmanship and business forms.....	5		Penmanship and business forms.....	5	
Manual arts.....	5		Applied art.....	5	
Physical training.....	2		Physical training.....	2	
Music (optional).....	1		Music (optional).....	1	
Study.....	13		Study.....	13	
SECOND YEAR.			SECOND YEAR.		
English.....	5		English.....	5	
Mathematics.....	5		Mathematics.....	5	
History of commerce.....	5		Commercial geography.....	5	
Penmanship and bookkeeping.....	5		Penmanship and bookkeeping.....	5	
Manual arts.....	5		Applied art.....	5	
Physical training.....	2		Physical training.....	2	
Music (optional).....	1		Music (optional).....	1	
Study.....	13		Study.....	13	
THIRD YEAR.			THIRD YEAR. ¹		
English.....	5		English.....	5	
German, French, Spanish (elective).....	5		German, French, Spanish (elective).....	5	
Chemistry.....	5		Chemistry (elective).....	5	
American history, civics, and municipal activities.....	5		American history, civics, and municipal activities.....	5	
Shorthand (elective).....	5		Shorthand (elective).....	5	
Typewriting (elective).....	5		Typewriting (elective).....	5	
Bookkeeping, accounting, and arithmetic.....	5		Bookkeeping, accounting, and arithmetic.....	5	
Physical training (optional).....	2		Applied arts (elective).....	5	
Music (optional).....	2		Physical training (optional).....	2	
Study.....	10		Music (optional).....	1	
FOURTH YEAR. ²			FOURTH YEAR. ¹		
English.....	5		English.....	5	
German, French, Spanish (elective).....	5		German, French, Spanish (elective).....	5	
Physics (elective).....	5		Physics (elective).....	5	
Economics, commercial law, and local industries.....	5		Economics, commercial law, and local industries.....	5	
Shorthand or stenotypy (elective).....	5		Shorthand or stenotypy (elective).....	5	
Typewriting (elective).....	5		Typewriting (elective).....	5	
Salesmanship (elective).....($\frac{1}{2}$ year).....	5		Salesmanship (elective).....($\frac{1}{2}$ year).....	5	
Office appliances (elective).....($\frac{1}{2}$ year).....	5		Office appliances (elective).....($\frac{1}{2}$ year).....	5	
Banking, transportation, business organization and cataloging.....	5		Banking, transportation, business organization, and cataloging.....	5	
Physical training (optional).....	2		Physical training (optional).....	2	
Music (optional).....	1		Music (optional).....	1	
Study.....	10		Study.....	10	

¹ Two of the elective studies must be chosen.² Three of the elective studies must be chosen.

66 points (term units) are required for graduation as follows: 1 year, 15; 2 year, 15; 3 year, 18; 4 year, 18.
 Required work: Prepared—Boys, 20 periods per week; girls, 17 periods per week. Unprepared—Boys, 2 periods per week; girls, 8 periods per week.
 Required work: Prepared—Boys, 20 periods per week; girls, 15 periods per week. Unprepared—Boys, 2 periods per week; girls, 7 periods per week.

*The High School of Commerce, Springfield, Mass.***FIRST YEAR.**

First semester:	Boys.	Girls.
English.....	5	5
Science.....	5	.....
Home science.....	.....	2
Sewing.....	.....	6
Penmanship and commercial arithmetic.....	5	5
Local history, government and industry.....	5	5
Physical training.....	2	2
Second semester:		
English.....	5	5
Science.....	5	.....
Home science.....	.....	2
Sewing.....	.....	6
Penmanship and commercial arithmetic.....	5	5
Bookkeeping.....	5	5
Physical training.....	2	2

Electives:	
General history.....	5
Algebra.....	5
Commercial geography II.....	5
Physics.....	5
Chemistry.....	5
Physiology and hygiene.....	5

FIRST YEAR—continued.

Electives:	Boys.	Girls.
Drawing.....	5	5
Woodwork.....	5	.....

SECOND YEAR.

First semester:	Boys.	Girls.
English.....	5	5
Commercial geography I.....	5	5
Bookkeeping.....	5	5
Cooking.....	.....	5
Elective (prepared).....	5	.....
" (unprepared).....	.....	5
Physical training.....	2	2
Second semester:		
English.....	5	5
Modern history.....	5	5
Bookkeeping and office practice.....	5	5
Cooking.....	.....	5
Elective (prepared).....	5	.....
" (unprepared).....	.....	5
Physical training.....	2	2

Electives:	
French.....	5
German.....	5
Drawing.....	5
Woodwork.....	5
Typewriting.....	5

THIRD YEAR.

Required work: Prepared—Boys, 20 periods per week; girls, 20 periods per week. Unprepared—Boys, 2 periods per week; girls, 2 periods per week.

First semester:	Boys.	Girls.	Second semester:	Boys.	Girls.
English.....	5	5	English.....	5	5
American history.....	5	5	Civil government.....	5	5
Electives (prepared).....	10	10	Electives (prepared).....	10	10
Physical training.....	2	2	Physical training.....	2	2

Electives:		Electives:	
Stenography.....	5	Any of the subjects offered as electives for the second year.	
Advanced bookkeeping.....	5		
Advanced cooking.....	5		

FOURTH YEAR.

Required work: Prepared—Boys, 20 periods per week; girls, 20 periods per week. Unprepared—Boys, 5 periods per week; girls, 5 periods per week.

First semester:	Boys.	Girls.	Second semester:	Boys.	Girls.
English.....	5	5	English.....	5	5
Economics I.....	5	5	Economics II.....	5	.....
Accounting and office methods....	5	5	Household administration.....	.....	5
Electives (prepared).....	5	5	Electives (prepared).....	5	5
Electives (unprepared).....	5	5	Electives (unprepared).....	5	5

Electives:		Any of the subjects offered as electives for the second and third years.	
Advertising and salesmanship.....	5		

In the first two years the girls are required to carry more hours of work per week than the boys, but as more of their work is unprepared, the actual amount of work required is no greater.

Penmanship will be required after the first year of all pupils whose penmanship is not satisfactory.

The High School of Commerce, New York, N. Y.¹

TERM 1.		TERM 6—continued.	
English.....	5	Raw materials ²	5
Penmanship.....	3	Commercial arithmetic ²	4
Elementary office training ²	3	Drawing ²	2
Typewriting.....	3	Physical training.....	2
Local industries.....	5	TERM 7.	
German, French, Spanish ²	5	English.....	4
Business arithmetic.....	5	Oral expression.....	1
Drawing.....	2	Advertising ²	4
Physical training.....	2	Salesmanship ²	4
TERM 2.		Accounting ²	4
English.....	3	Commercial law ²	4
Elementary Bookkeeping.....	3	Merchandise, office work ²	10
Office training ²	5	Typewriting ²	2
Typewriting.....	3	Stenography ²	5
Hygiene.....	4	Economics.....	5
German, French, Spanish ²	5	American history.....	5
Commercial algebra.....	5	German, French, Spanish ²	5
Drawing.....	2	Physics ²	5
Physical training.....	2	Advanced chemistry ²	4
TERM 3.		Advanced mathematics ²	4
English.....	3	Statistics ²	4
Bookkeeping.....	4	Drawing (commercial design) ²	5
Typewriting ²	2	Physical training.....	2
Stenography ²	5	TERM 8.	
History ²	3	English.....	4
German, French, Spanish ²	5	Oral expression.....	1
Chemistry ²	5	Advertising ²	4
Geometry ²	5	Salesmanship ²	4
Drawing.....	2	Accounting ²	4
Physical training.....	2	Business procedure ²	4
TERM 4.		Merchandise, office work ²	10
English.....	3	Typewriting.....	1
Bookkeeping.....	4	Office training ²	4
Typewriting ²	2	Economics (banking, finance).....	5
Stenography ²	5	Labor problems ²	4
History ²	3	Comparative government.....	5
German, French, Spanish ²	5	German, French, Spanish ²	5
Chemistry ²	5	Advanced chemistry ²	4
Geometry ²	5	Advanced mathematics ²	4
Drawing.....	2	Business arithmetic.....	2
Physical training.....	2	Advanced commercial design ²	5
TERM 5.		Physical training.....	2
English.....	3	TERM 9.	
Bookkeeping.....	4	General English ²	3
Typewriting ²	2	Advertising ²	4
Stenography ²	5	Salesmanship ²	4
Economic geography ²	4	Advanced accounting ²	4
History.....	3	Merchandise, office work ²	10
German, French, Spanish ²	5	Speed stenography ²	5
Physics ²	5	Transportation ²	4
Raw materials ²	5	Foreign trade and procedure ²	4
Commercial algebra ²	4	German, French, Spanish ²	4
Drawing ²	2	TERM 10.	
Physical training.....	2	General English ²	3
TERM 6.		Advertising ²	4
English.....	3	Salesmanship ²	4
Bookkeeping.....	4	Advanced accounting ²	4
Typewriting ²	2	Merchandise, office work ²	10
Stenography ²	5	Speed stenography ²	5
History.....	3	Public finance ²	4
German, French, Spanish ²	5	Foreign trade and procedure ²	4
Physics ²	5	German, French, Spanish ²	4

¹ Boys only.² Electives.

D. The subjects in detail:

(a) *English*.—Good English training is fundamental. Its aims should be many. A stenographer who can not spell and punctuate correctly is the particular abomination of the dictator. A little further along the line the ability to compose a fitting letter is essential. Should English, or any native speech, in a commercial school be made specially commercial? Yes and no. Not too much so; because there should be no such thing as "commercial English," lest we fall into the abyss of much of the popular advertising style. Yet there are legitimate business forms of thought and methods of expression which do not occur in ordinary literary composition and still are perfectly good English (or other vernacular). There is then a specialized commercial use of good English; and this is to be cultivated by a study of good specimens of business letters and by reading of standard books on business subjects. But the study in a commercial course of one's native tongue should have in it a large proportion of literary work for the purpose of broadening the mind, forming the taste and the style, and making the future business man able to meet other educated people on their own ground.

(b) *Foreign languages*.—The lead which Germany has won in many departments of foreign trade is largely due to the admirable training which she gives her traders in the speech of the lands they intend to deal with. They learn foreign tongues colloquially and for business use, and so meet the foreign trader on his own ground. A mere reading and writing knowledge of a language may be sufficient for correspondence purposes in a bungling way. The speaking knowledge is essential if the language learned is to be of the widest service. The "direct" method of teaching languages, more or less modified, is essential if they are to be of real service. We Americans of the United States are proverbially slow in linguistics. We have been too provincial. If we are to profit by the business opportunities now forced upon us we must reform in our attention to foreign speech. This is particularly true of Spanish. The spread of the study of Spanish is most notable. In the commercial schools of New York City it is growing by leaps and bounds above the study of German. And this tendency was very marked for several years before the present war came to accentuate the value of Spanish. The president of the Southern Railway has recently said that there are 40,000 students of Spanish in the schools of our Southern States.

The demand of Portuguese for a place in our curricula ought soon to be recognized. The great Brazilian Republic with its nearly 20,000,000 of people, who are insulted if they are confounded with Spanish Americans, demands of our merchants that they meet them with their own ancestral speech.

(c) *Penmanship*.—It is often said that the introduction of machine writing does away with the need of the old-fashioned insistence on good handwriting. But good script will never be out of date. It must be taught early in the course, and maintained throughout it. It is often found that pupils grow careless after they have once passed the penmanship test. A good remedy for this, in addition to constant insistence upon good work by every teacher, is to compel those who show deterioration to practice the art after school until their form is restored.

(d) *Arithmetic*.—The same trouble is commonly found with arithmetic as with penmanship. If it is well taught in the first year pupils nevertheless forget it before graduating. Here again the only remedy is by frequent tests and by extra work on the part of incompetents. Inaccuracy in results and lack of knowledge of ordinary commercial processes is inexcusable in the graduate of a commercial school.

(e) *Bookkeeping*.—Training in elementary bookkeeping is essential for all commercial pupils. For those who expect to be bookkeepers more advanced work is required. But the graduate of a first-class commercial school should not aim to be a bookkeeper. And for him the question of advanced work in that art should be decided by what his ambitions are. If he looks forward to accountancy he should have as good work in bookkeeping as his school can give. Not the higher work in accounting; for the high-school pupil is not mature enough for this. It is a college subject. But the whole

work in bookkeeping often needs elevation to a higher plane. It should be utilized to make familiar a very large range of business processes and principles; and not merely to enable the student to keep a set of petty accounts.

(f) *Stenography and typewriting*.—Here again is debatable ground. Should all pupils take it? By no means. It is true that in many schools and especially in the private commercial schools these two arts, with bookkeeping, are made the backbone of the course. But in deciding on whether a pupil is to be made an expert in stenography and typewriting the aim of his course must again be taken into account. It is true that these connected arts often enable the young graduate to secure immediate employment, and thus open the way for him to higher work. But if the business world learns that a four year commercial course is designed to make something more than mere amanuenses it will come to our best schools for graduates of a different type. Moreover the various mechanical voice recording machines and the stenotype bid fair to do away with employment of a large number of stenographers. Why then make all pupils go through the drudgery of acquiring arts that are likely to be only of temporary use if of any? It will be found that in many of the best schools the study of stenography and typewriting is made wholly elective.

(g) *Commercial geography*.—This ought to be made one of the most useful and interesting subjects of the course. Especially in any large city it should center round the city itself and its industries.

(h) *Commercial law*.—An eminent school superintendent once said that he saw no place for law in a commercial curriculum; that it could lead only to making pettifoggers of the young people. That remark showed an entire misconception of what commercial law is meant to teach. Its main work, and an indispensable one, is to familiarize the pupil with the question of contracts and of negotiable paper.

(i) *History and civics*.—Sometimes an uninformed parent will ask that his child be allowed to drop history on the ground that it has no bearing on business. That notion is preposterous. But the history in a commercial curriculum should be taught with a mind keen for its economic and social bearings. Here comes in the question of teaching the history of commerce as such. Few more unprofitable tasks can be found than to attempt to teach such history without the proper background of general historical knowledge. The place for teaching economic developments is in connection with the movements that produced them. Civics is necessary for the budding citizen, and more especially in view of the fact that politics, and notably municipal politics, should be largely an application of business principles. Some good schools introduce very early in the course a preliminary study of the civics of the immediate environment, as a business proposition.

(j) *Economics*.—This subject is one of vital importance. When a teacher understands it well himself, and can lead his pupils to a constant application of its principles to current events it becomes one of the most wideawake and informative studies that can be pursued. But the teacher must be able and willing to travel far beyond the confines of any text-book.

(k) *Mathematics*.—There is a pronounced movement in favor of combining algebra and geometry in an interwoven course. But why teach them at all to commercial students? They should not be taught in the same way as to those who are to enter college, but with a view to many practical applications. Geometry is useful for mensuration purposes, as well as for its disciplinary value, and algebra has manifold applications to computation and formula making that are invaluable. The boy who has learned in school to make graphs can sooner or later find use for that knowledge in any large business.

(l) *Physics and chemistry*.—Here again is the call for marked differentiation from college preparatory work. Industrial science, with practical applications to the commoner arts and processes, should be the aim. Thoroughgoing knowledge of the fundamentals of these sciences is essential to the technical student, but not to the commercial pupil. His study of science should aim first to acquaint him with a few

of the underlying principles and then to familiarize him with the common processes just alluded to.

(m) *Drawing*.—Art is desirable, but the fine arts have no place in our work. Free-hand work properly centers around display, poster, and advertising work. The business man, whether he is to be a producer of posters or not, should be a critic of his own advertising work and of the general artistic form of his products.

(n) *Music*.—This is the only purely cultural subject allowed in most commercial courses. By all means let it be retained and honored. The writer knows of one commercial school where it holds a high place in the esteem of the pupils and where the school has a just repute as a home of good music. In our utilitarianism we can well spare a place for an hour a week of pure art.

IX. THE COMMERCIAL TEACHER.

As stated once before in this paper, the commercial school will not come fully into its own until there is a higher standard for commercial teachers. Too often graduation from a high school, with a term in a business college and a year or two of office experience, is all that is required. A well-known teacher in a business department of a great university has just declared that the ideal preparation for a teacher of commercial branches would be graduation from college, then three years in a graduate business course, followed by three years in business. When he was asked how many men would take such a course for an initial salary of \$900 and a maximum of about \$3,000 he replied that the change for the better was bound to come. And when the teacher of academic subjects is required to be a college graduate and to have post-graduate work as well, it seems to be a necessity to secure men of equally broad training for the commercial work.

X. COOPERATION OF BUSINESS MEN AND ASSOCIATIONS.

One of the most encouraging signs of progress in commercial education is that business men are taking much more interest in business schools. In some cities active committees of business men are appointed to cooperate with the schools. In New York City the great Chamber of Commerce has taken up the matter. Leaders in business can help and do help—

A. By visit and criticism.

B. By giving lectures on commercial topics.

C. By gifts of specimens and apparatus. A member of the New York Chamber of Commerce recently said that it would pay the electrical and chemical concerns to keep the commercial schools supplied gratis with the very latest equipment in their lines.

D. By use of the cooperative system of training. This has for some time been in use, more especially in the case of industrial students. It is now being adapted in New York to commercial training. The essence of it is this: The pupil is taken into the business concern or office on alternate weeks; one week he is in school, the next week in business; each such pupil has a mate who alternates with him between school and office, and his training thus becomes practical as well as theoretic. This plan has been adopted by a goodly number of the finest New York firms, and thus far seems to promise excellent results. One of the difficulties is that a first-class firm desires only first-class apprentices. In industrial employments it is different. Factories and shops will take the average pupil on the terms outlined; the office will take only the superior student.

XI. PREPARATION FOR PARTICULAR FIELDS.

Some commercial schools display various types of courses adapted to specific fields of commercial work, such as export trade, transportation, drugs. Such specialization seems to be beyond the scope of the secondary school. The boy of 15 or 16 very

rarely can say, "I am going into this line or that and no other." And even if he can, the secondary school is not the place for narrowly technical preparation; nor should it try to imitate the work done in schools of the university type.

There is one broad, general field which may well be had in mind in secondary work. It is the field of foreign trade. We know, as a matter of fact, that a good many graduates of our commercial schools are being sought now for Latin American positions. Our schools will do well to have this growing possibility in mind. An English writer has thus stated the preparation for work in foreign fields.

"1. An effective knowledge of foreign languages.

"2. A knowledge of the modern methods of importing or exporting goods, including freightage and modes of transport.

"3. A thorough knowledge of the goods in which he deals and of the sciences bearing on his trade.

"4. A knowledge of the markets at home and abroad and the customs of the trade.

"5. To understand foreign tariffs, foreign weights, measures, and moneys, and the exchanges.

"6. To be acquainted with the technicalities of commercial documents, such as bills of exchange, bills of lading, insurance policies, etc., and to have some knowledge of commercial law.

"7. To know the principles of bookkeeping and accountancy.

"8. A knowledge of economics bearing upon commerce, and the use of trade statistics."

XII. THE HIGHEST TYPE OF SECONDARY COMMERCIAL TRAINING.

As a summary of all that has been said and as a plea for the very highest type possible of secondary commercial schools it may be pointed out:

A. That there is a danger in a satisfaction with the lower ranges of training, although this may be all that is attainable in the small department. But the training of youth for mere clerical, recording positions rather than for positions of responsibility and power is not a sufficient ambition.

B. Business men are demanding the higher type of preparation. Again and again they say in the employment offices of our big commercial schools: "We want a young man whom we can train rapidly for the headship of a department, for an assistant secretaryship, for our managership in a distant city." Business men are finding out that our schools can develop boys fit for such training, and they are asking for them and less and less for bookkeepers and stenographers.

C. The success of many graduates proves the value of the better type of work. To cite real cases: The statistics of one very large school show that most of its graduates have ceased to be stenographers within five years of graduation. One very large New York house began to use the graduates of a city school six years ago. Three of its branch managers in other great cities are among the graduates thus selected. None of them was taken as stenographer or bookkeeper.

COMMERCIAL COURSES IN THE YOUNG MEN'S CHRISTIAN ASSOCIATION

By EDWARD L. WERTHEIM.

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OPPORTUNITIES IN THE ASSOCIATION FOR COMMERCIAL EDUCATION.

The United States Young Men's Christian Association presents unusual opportunities for commercial training. The majority of its 575,000 members are business

men. Its 91,000 committeemen and 20,000 directors are men mainly of commercial interests. The large city association buildings call for men of business training to finance and administer. The secretaries in charge must have recognized business ability, in addition to other necessary qualifications. It is quite natural, therefore, that with this business trend the educational department has emphasized commercial education in the training of men and boys.

THE ASSOCIATION'S HISTORY.

1. Its beginning:

a. In London, England.—The first association was started in London, England, in 1844. It resulted from regular religious meetings of a few dry-goods clerks held in the room of a fellow worker, George Williams, afterward knighted Sir George Williams. The meetings of these and similar groups grew in interest until a permanent organization was formed with a council meeting place. This was in Exeter Hall, the first home of the association.

b. In North America.—The movement began in North America in 1851 in Montreal, Boston, and New York. Then it spread rapidly to other cities. Within three years, 40 associations had been organized.

2. Growth in North America:

In North America the activities of the association, at first strictly moral and religious, came to include physical, social, and educational interests as well, constituting "the fourfold work" as it is called. To-day the association encourages every interest and every activity tending to a full and rounded development in men and boys.

Although at first it appealed only to a limited class living in cities, its present scope includes literally all sorts and conditions of men; for example, railroad men, the enlisted men in the Army and Navy, the American Indian, colored men, "down and outs," and workers in various industries including iron and steel, cotton, metal mining and lumber. There are associations among college students, community work to reach the country boy, special classes for immigrants. At the present time Young Men's Christian Association secretaries have gone out from North America to do organized work among the soldiers of various nations in the camps of Europe, as well as in every large country of the globe.

The following table indicates in part the large growth of the association after 15, 35, 51 and 64 years, respectively:

North America.	1866	1886	1902	1915
Number of associations.....	90	1,176	1,736	2,067
Total membership.....	15,548	154,921	359,455	620,789
Employed officers.....	12	864	1,834	4,077
Buildings.....	(¹)	116	400	739
Value of buildings.....		\$4,822,980	\$25,417,605	\$97,489,448
Current expenses of associations.....	\$50,000	\$957,023	\$3,583,496	\$12,924,701
Associations reporting gymnasiums.....	(¹)	168	545	728
Associations reporting educational classes.....	4	282	359	468
Number of students.....	60	6,000	30,143	83,771
Paid teachers and leaders.....			1,200	2,592
International secretaries.....	(¹)	14	44	93
Current expenses international work.....	\$522	\$37,848	\$150,574	\$354,040

¹ None.

WORK OF THE INTERNATIONAL COMMITTEE.

Although each local association is regarded as a unit, responsible for its own management, finance, and general conduct, the work as a whole is to some extent guided unified, and coordinated by the international committee from its building at 124 East Twenty-eighth Street, New York. There the general secretary, Dr. John R. Mott, has associated with him 94 secretaries for home work. These men assist in encouraging the local North American associations by visitation, correspondence and suggested

plans. Under this committee there are also 184 secretaries for the foreign work. Some of these are in the home office, but the majority are in the field as local secretaries, many of them as pioneers. Many foreign associations conduct work comparable in every way with the larger American associations. Well-organized associations are now in 21 nations, including Japan, China, Korea, India, Ceylon, Philippines, Bermuda, and Latin America.

LATIN AMERICA.

The associations in some of the Latin American cities own their own buildings while others are in rented quarters only, working under conditions similar to those of our own early association history.

The following brief summary gives only a hint of their splendid work:

Argentina.—The Buenos Aires Association is well organized, owns its building and has a membership of about 1,800, of whom one-half are Argentinians. The work is carried on in five languages, including Spanish, Danish, French, German, and English.

Brazil.—Rio de Janeiro owns its own buildings and conducts a splendid work among a membership of 1,549. Four hundred and eighty different students were in educational classes last year. Recife owns a small building and has a membership of 235. São Paulo rents its quarters and has a membership of 262. Forty-eight studied in educational classes last year. Porto Alegre is also in rented quarters. It has a membership of 237, made up of 15 nationalities. One hundred and twenty-one men of ten nationalities studied 12 different subjects last year.

Chile.—Valparaiso is housed in reconstructed rented quarters, with a membership of 109. From 40 to 50 students in educational classes were reported last year.

Uruguay.—Montevideo occupies rented quarters, with a membership of 600, 46 of whom were in educational classes.

Mexico.—Mexico City owns a splendid modern building with a membership of 1,300. All activities, including educational work, have been interfered with by the revolution. Chihuahua occupies space given by the Government in the National Theater building with about 600 members. Here, too, the revolution has interrupted. Monterrey is in rented quarters. No record of membership or educational work.

Cuba.—Havana just entering its splendid new building. No organized work has started.

Porto Rico.—San Juan has a new building with more than 400 members; 89 were in educational classes.

EDUCATIONAL WORK.

The first department to be organized was the popular physical department with its well-equipped gymnasiums and swimming pools. The organized educational department is a later development.

Its early beginnings.—The association has aimed to meet definite needs of men and boys as these needs have been discovered. Its growth has been gradual, starting at first with reading rooms and libraries in 1851. Lectures, practical talks, and educational classes were added. Classroom instruction was introduced in 1860. The association was gradually finding a particular educational work amidst other institutions. Subjects introduced at the beginning were already provided by the schools and colleges.

Finding its field.—The kind of instruction that developed grew out of the needs of men. Subjects not taught elsewhere were introduced. So far as is known, definite evening educational instruction of a strictly vocational nature had its beginning in the Young Men's Christian Association. At first no fees were charged. This encouraged men to receive something for nothing and was changed. The charging of fees to cover part of the cost of instruction enabled the work to be carried on on a much larger scale with better paid instructors. The students attended more regularly and did better work. Men are interested in what they pay for. Special secreta-

ries to give full time to develop educational work were employed. To-day there are 81 associations with local educational secretaries.

Kinds of classes.—One hundred and thirty different subjects were taught last year, the larger number in evening classes. In addition, a few associations provided regular two, three, and four year courses fitting for college and university. Among the successful classes offered are advertising, salesmanship, accountancy, real estate, business and personal efficiency, business psychology, Spanish, German, French, Russian, Italian, business English, English for foreigners, bookkeeping, stenography, typewriting, transportation, banking, printing, finance, automobiling, motor boating, exporting, public speaking, etc. The demand determines the class. Wherever and whenever some particular training is needed the association provides the instruction.

EDUCATIONAL WORK IN 1915.

In the United States last year 78,000 men and boys were in educational classes. There were 2,512 paid teachers and 4,700 lecturers. The expense was \$1,045,900, of which \$800,024 in tuition fees was paid by the students. The following table shows the growth in North America:

	1892	1914	1915
Different students—men and boys.....	10,000	84,577	83,771
Paid teachers and leaders.....	415	2,858	2,592
Lectures and practical talks.....	460	13,414	14,819
Students in association day schools.....		8,213	8,031
Students outside association building.....		17,900	22,653
Business men in special advanced courses.....		11,980	11,910
Association with educational secretaries.....		82	84
Receipts from students' tuition fees.....		\$785,274	\$814,024
Expenses aside from rent, light, and heat.....	\$54,000	\$1,086,763	\$1,070,900

GOVERNING PRINCIPLES OF ASSOCIATION EDUCATIONAL WORK.

1. A work for men by men. The student comes to receive practical help under sympathetic guidance of men who know. Questions that he would not ask where he is employed through embarrassment or fear, are here frankly asked and answered.

2. Instruction is given either in or outside the association building. The instructions goes to the man whether in the building or in the shop, during the day or at night. No precedent need be followed except that of helping men at the point of their need.

3. Teachers of ability are selected. Search is made in the community for an expert in the particular line. He must be able to instruct and to inspire his students. Not only must he possess expert knowledge, but he must know how to impart it interestingly. The men who attend are frequently tired from their day's work and their attention must be held.

4. Practical subjects are taught. To advance in their present position and to prepare for a different employment are the predominant motives that attract men to these classes. They learn in the evening what they are able the next day—or in the near future—to apply in their work. They convert their learning into producing money. They sell more goods, write better letters, get new ideas, and work more efficiently.

5. Students pay for the instruction—in some cases far below the actual cost. The educational work as a whole aims to be as nearly self-sustaining as possible. It was found that self-respecting men prefer to pay for what they get; they appreciate the value, and attend more regularly.

6. There are classes for the foreigner. A man speaking a foreign tongue has a warm welcome at the association. English classes are provided for him both in and outside of the building, often with no charge. If he desires to become an American citizen, he is encouraged and guided to that end in the various naturalization classes.

Association secretaries are at some places of departure from foreign lands and aid the emigrants as they sail for America. And these same men find the same association in New York or other American seaports ready to help them as they land. They are encouraged to come to the association for help and advice—22,000 of them did so last season.

7. A full-rounded development along physical, social, and religious lines is encouraged. A close interrelationship of all departments exists. Sometimes the physical development may be more important to a man than the educational. One man may need to have his social nature developed through association with others; another most needs moral or religious quickening. Men of all religious denominations are made to feel that the association aims to help men irrespective of creeds to the highest form of all-round, well-developed manhood.

HOW THE ASSOCIATION SCHOOLS PREPARE MEN FOR BUSINESS.

1. The association is organized on business lines. In the large commercial centers its membership, committees, and directors are largely business men. These are daily thinking and planning in terms of business, and are constantly working out business problems. It is very natural, therefore, that in connection with the association they think along commercial lines and that many of the educational classes are of the business type. These men, anxious to improve themselves, get together in classes for instruction or to attend lectures and discussions on practical business subjects.

2. Employment departments are closely associated with the educational and many who apply for positions are encouraged to train in the educational classes. The demand for men coming through the employment department often determines the kind of classes that are needed.

3. Unlike many institutions the association finds it not difficult to arrange quickly for the introduction of new and timely courses. Exporting, for example, was immediately introduced in two of the associations at the outbreak of the present European war when there was a general discussion as to where the proper knowledge of foreign trade could be secured. Successful classes in accountancy, salesmanship, credits, and business efficiency were similarly introduced. Before starting a course the interest in the subject is often tested by a series of lectures. The attendance, as well as the expression of the men, determines whether a more formal class work is desirable.

4. Practically a new type of instruction has developed. It is of a particularly vocational nature. The men attend for some particular reason, to secure some knowledge that they must have and which can be supplied through the teacher or lecturer. The cultural side is not neglected in certain classes, but in the commercial courses the emphasis is laid primarily on the practical side.

5. The instruction is as far as possible individual. The instructor allows the student to progress as rapidly as his ability and time warrant. He is not retarded by the other members of the class. The association teacher learns what application the student expects to make and then suits the course to that need.

6. Group class instruction is also given. Here the instructor or lecturer is a recognized expert in his line. The students ask questions, and discuss subjects from their point of view. Sometimes the most valuable part of the exercise comes from exchange of information among the students themselves. Men, encouraged to tell what they know, contribute to the joint profit of all. Classes of this nature, therefore, become a great clearing house of commercial knowledge which can be printed and passed on to the other man.

DEFINITE TRAINING BY THE ASSOCIATION TO ACQUAINT YOUNG MEN WITH THE BUSINESS OPPORTUNITIES IN SOUTH AMERICA.

There has been a growing interest in Latin America, intensified this last year by the European war and by a discussion of our opportunities. Only beginnings, however, have been made in definite educational work along this line.

Spanish has been one of the popular subjects, and 1,000 men have been studying the language. The enrollment has more than doubled in many associations. Men realize that although they may be trained in modern business methods, they are handicapped if they do not speak Spanish. Construction of railways and promotion of mining and manufacturing establishments, financed with American capital, call for men who can speak and write the language. The conversational method, with little emphasis on rules and grammar, is employed. A rapid acquaintance with a vocabulary is found to be the most practical and beneficial.

Exporting was introduced in two associations—at the West Side branch, New York City, and at San Francisco.

The former course consisted of 15 lectures, arranged under the direction of the following advisory committee: Willard Straight, J. P. Morgan & Co.; B. Olney Hough, editor American Exporter; John E. Gardin, foreign exchange department, National City Bank; J. Louis Schaefer, vice president W. B. Grace & Co.; Welding Ring, president American Exporters & Importers Association.

The director of the course was John Franklin Crowell, Ph. D., L. H. D.; 75 men took the instruction. A feature of the course was the preparation by the class of written answers to questions prepared by the director. Among the subjects treated were the following: First steps in exporting, by B. Olney Hough, editor American Exporter. Problems of geography in foreign trade, by J. Russell Smith, Wharton School, University of Pennsylvania. Correct packing for export, by Paul W. Gilbert, of William E. Peck & Co. Foreign forwarding problems, by John B. Kirkman, vice president Austin Baldwin & Co. (Inc.). Problems in competition for foreign trade, by Joseph J. Slechta, general agent the Lloyd Brasileiro Steamship Co., formerly vice consul general of the United States at Rio de Janeiro. Great currents in the world's foreign trade, by O. P. Austin, formerly chief of the Bureau of Statistics, Department of Commerce and Labor, Washington. Personal relations: Traveling salesmen, by George H. Richards, manager foreign department, Remington Typewriter Co. American policy in foreign trade, by James T. McCleary, secretary American Iron and Steel Institute. Export merchandising by salesmen and advertising and correspondence, by Walter F. Wyman, manager export department the Carter's Ink Co. Branch banks their opportunity in the new movement for expanding our foreign commerce, by William S. Kies, foreign banking department, National City Bank. Shipping and shipbuilding, by Emerson E. Parvin, secretary International Mercantile Marine Co. Comparative purchasing power of our export markets, by J. Louis Schaefer, vice president Wm. R. Grace & Co.

Export opportunities in South and Central America, by William E. Peck, of Wm. E. Peck & Co. Under this head was treated the following: How our export business with South America has been developed. What should be done to further enlarge our trade in these countries. Some problems. Dependence of exporting on banking and shipping facilities. Actual operations in business. Demand for experts under existing conditions of competition.

A foreign trade school was conducted at the San Francisco association in cooperation with the local chamber of commerce. There were 16 men enrolled in foreign trade and 17 in Spanish. The instruction covered the following points: Export principles; laws pertaining to foreign commerce; mathematics applied to exporting and importing.

Under export principles the following subjects were discussed: Historical sketch of international trade; economic theories affecting foreign trade; tariff; commercial geography; exports and imports of the United States, where produced, how produced, where sold, prices; exports and imports of San Francisco; trade routes of the world; effect of the war and Panama Canal; maritime insurance; foreign exchange; problems of international shipments; customhouse requirements; practice in handling documents; method of extending foreign trade; opportunities of increasing foreign trade;

analysis of conditions affecting trade—1. With Mexico and Central America. 2. With South America. 3. With China and Eastern Asia. 4. With islands of the Pacific. 5. With Europe. 6. With islands of the Atlantic.

Under laws relating to foreign commerce the following subjects were discussed: Law of common carrier; negotiable instruments; maritime law; insurance law; international law, relating to vessels and merchandise in times of peace and war; summary of rights, responsibilities, and liabilities of consignor, carrier, and consignee.

In addition, courses in sales advertising, foreign languages, and accounting essentials were given, with the bearing that they might have on foreign trade.

A free course of eight lectures on foreign trade was given at the Washington, D. C., association, under the direct supervision of Wilbur J. Carr, Director of the Consular Service, in cooperation with Dr. Edward E. Pratt, Chief of the Bureau of Foreign and Domestic Commerce. The attendance at these meetings averaged about 121. The lectures were the following: Promotion and financing of foreign trade; foreign commercial conditions and opportunities; foreign shipping and maritime insurance; foreign tariffs; Department of State and foreign trade; influence of the United States Post Office Service on foreign trade; foreign trade and American banking.

INDIRECT EDUCATIONAL WORK AND THE ENCOURAGEMENT OF FRIENDLY RELATIONS.

Indirect educational work dealing with Latin Americans consisted of the following: *Talks and Lectures.*—Lectures to Salesmanship Class about the Possibilities of South American Trade; stereopticon lectures on South America; travellogues at infrequent intervals; lectures on the opportunities in South America; lobby talks and auditorium meetings.

Clubs.—Men have met in Spanish-speaking clubs to encourage conversation.

Encouragement of friendly relations.—A lasting commercial life must be based on friendly relationships so that definite plans have been encouraged:

1. A special secretary, Mr. A. Espener, has been employed in New York City, where there are 60,000 Latin Americans. He endeavors to assist students and young business men. He brings these men together for discussion from time to time.

2. Many of the associations in the United States help with the financial support of secretaries in Latin America. Members contributing toward this work become interested in the associations there and get acquainted with the conditions. Some have visited these associations.

3. Helping men after they arrive. Every local association is glad to be of help. Secretaries with the letters Y. M. C. A. on their caps are at the following railway stations to be of assistance to men: Chicago, Detroit, St. Louis, San Francisco. Two Secretaries are also stationed at Ellis Island to take care of the immigrants.

THE ASSOCIATION'S OPPORTUNITY TO GIVE KNOWLEDGE OF LATIN AMERICAN CONDITIONS.

The association, made up of young business men, presents an opportunity for diffusing information about Latin America. All that is being done may be continued with special attention to the following:

The desirability and value of being able to speak, write, and read Spanish, and of having a fair knowledge of Portuguese and French, should be emphasized.

Encouragement should be given to acquiring a knowledge of the history of South America, with special attention to that of recent years.

A thorough knowledge should be gained of the products of the various countries, and those used which they are obliged to import, and the origin of the latter.

The commercial laws of the various countries should be studied.

Definite courses in exporting should be introduced in cities where export trade is carried on.

The association libraries should have Latin American books, magazines, reports, trade directories, and newspapers for the use of Latin American readers and others.

Chambers of commerce and similar organizations should be encouraged to meet at the association and have lectures and discussions on foreign trade relations.

Latin American students can be encouraged to meet and learn American ways of business. This will do much toward establishing both friendly and business relationships when they return for they will be the leaders.

Existing successful courses in the Association, such as salesmanship, advertising, credits, can be so enlarged as to have a direct bearing upon the Latin American interests.

Associations in Latin America can be encouraged to select and train men who might be appointed as representatives for American houses. English should be taught especially.

Latin-American associations should be listed in exporting directories, magazines, etc., to serve as a point of contact for traveling representatives going to these cities. It must be understood, however, that the association work in many of these cities is young and elementary but rapidly growing. They are now where some North American associations were a few years ago. They present, however, splendid opportunities for developing their work along the line of commercial helpfulness, so far as it may fit into their program.

These associations can help direct young business men and students who come to America to study conditions, by giving them letters of introduction to secretaries in America.

The association, with its close cooperation with the public schools in many cities, can encourage emphasis on Latin American conditions and interests by having prominent men familiar with the countries speak to the students, especially those in the high schools. The study of Spanish and Portuguese should be encouraged. In many of the subjects now taught attention may be called to the close relationship of the United States with Latin America. The teachers themselves should be encouraged to study and read much about Latin America.

In the preparation of this paper I am indebted to the following:

1. To 80 educational secretaries in the United States, the majority of whom have answered questionnaires and written personal letters.

2. To secretaries of the international committee; Mr. George B. Hodge, educational department; Mr. Charles D. Hurrey, formerly general secretary of South America; Mr. F. J. Nichols; Mr. E. C. Jenkins; Mr. A. Espener, special secretary among Latin American men.

3. Consuls general, including Hon. William Wallace White, of Paraguay; Hon. Edouard Higginson, of Peru; Hon. Edward P. Perez, of Argentine.

4. Representative men either conducting business in Latin America or knowing conditions there: Mr. Sidney Story, president North & South American Trading Co., Louisville, Ky.; Dr. Harry E. Bard, secretary Pan-American Society of the United States; Julio Acevedo, manager Export Trade Directory Co.; J. D. Martine; W. Welsh, foreign trade department, National City Bank; Dr. W. E. Aughinbaugh, editor export department, Leslie's Weekly.

5. The preparation of the bibliography attached was made possible through the courtesy of Mr. J. Velli of the International Book Co., of New York, and of Miss Adelaide R. Hasse, chief document division, New York Public Library.

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is interested. Each volume contains a political history of the country, and also an account of its present conditions, its productions, commerce, industry, and future prospects. Illustrated with pictures and maps. 8vo. Price, postpaid, per volume, \$3.15. Scribner's Sons, New York City.

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A Guide to the West Indies: By F. Ober. (1914.) Illustrated, and with many maps. 12mo. Flexible cloth. Price, postpaid, \$2.40. Dodd, Mead & Co., New York City.

The CHAIRMAN. A year ago last July when the rumors and the possibilities of war in Europe were occasioning a great deal of concern over the world, it was my very good fortune to be received by a Chinese minister of state in Peking. After our little business had been concluded, by way of making conversation I said to his excellency, "Do you think there will be war in Europe?" "Oh, no," he said, with a great deal of the hopefulness and a great deal of that humor for which the Chinese are famed; "There won't be any war anywhere, for Mr. Bryan, with his peace treaties, has fixed that." The eminent statesman who is to be the principal speaker of the afternoon surely needs no introduction to this audience, or to any American audience, or to an audience anywhere in the world for that matter, but it may be quite proper to point out, as some in the audience may not know that it was at the time when this eminent gentleman was Secretary of State for the United States that he laid out the great plan and scope of this wonderful scientific congress, whose results you have been seeing from day to day, and results which will reach far into the coming years. It was during the administration and under the direction of this gentleman that the foundation work for this great congress was laid. It is, therefore, with peculiar pleasure that I present to this audience Hon. William Jennings Bryan.

COOPERATION.

By Hon. WILLIAM JENNINGS BRYAN,

Ex-Secretary of State of the United States.

Allow me to preface my remarks by saying that my object in attending this session of the Pan American Scientific Congress is not so much to make an address as to meet the distinguished delegates here assembled and to testify by my presence to my deep and continuing interest in all that relates to the Republics of Central and South America. My concern in their development and welfare, while antedating my connection with the State Department, was increased during my occupancy of office, and it has not abated since my retirement. I desire to be enrolled among the permanent friends of these neighboring Republics, and shall hold myself in readiness to respond to their call whenever I can render them any assistance.

In casting about for a theme for my brief remarks to-day it occurred to me that the word "cooperation" might well serve as the point about which to group certain suggestions, for which I ask your consideration.

Cooperation is the growing word of the twentieth century. There is noticeable everywhere an increasing tendency on the part of individuals and nations to act together in matters of mutual concern. In business life the idea is accentuated by the

multiplicity of corporate organizations, in which individuals associate themselves together for the advancement of their joint interests. Nations, too, are more and more considering matters of common interest, and lending to each other the assistance that comes from joint action. While the unprecedented struggle now raging across the Atlantic has for the time being interrupted international cooperation in that section of the world, it should be regarded as a temporary suspension of cooperation rather than a permanent surrender of the idea.

Cooperation in the Western Hemisphere has been more general than in the East because of the greater similarity of our institutions and political aims, and also because of the absence of the issues and prejudices which have made international dealings less intimate there than they are on this side of the ocean. Then, too, the present conflict in Europe has tended to draw the Republics of the Western Hemisphere nearer together, as their dependence upon, and their power to aid, each other have become more apparent.

With this introduction permit me to suggest a few lines of action along which I believe it is possible for us, with mutual advantage, to cooperate to a larger extent than we do now.

First, the language tie which binds nations together is a strong one; ability to speak to, and understand, each other lies at the foundation of both business and social intercourse. The two languages spoken in the Americas are the growing languages of the present century. The rapid increase in the population of the United States would alone greatly increase the English-speaking population of the world during the next century, and, in addition to this, the use of the English tongue is rapidly spreading in the Orient and in the commercial centers of the world. As the Central and South American countries are likely to repeat during this century the development witnessed in the United States during the past century, the Spanish language seems destined to fill an increasing place in the world's future.

Every possible encouragement should, therefore, be given to the teaching of the English language in Latin America and to the teaching of Spanish in the United States. There are several ways in which this encouragement can be given. An exchange of professors would be an advantage. If arrangements could be made by which the colleges and universities of Central and South America would accept American instructors in return for Latin-speaking instructors sent to the United States, the temporary exchange would not only be helpful in extending the two languages but a larger acquaintance would follow, and acquaintance is, after all, the most essential thing in the improvement of international relations, whether business, social, or political.

Encouragement could also be given to the study of the two languages by colleges, especially by those located in the southern part of the United States and in the northern republics of Latin America, where special inducements could be offered foreign students. The United States, for instance, could establish in Porto Rico, Panama, and at accessible points along the Gulf coast, schools in which special attention would be given to the teaching of the Spanish language and Spanish history, and the Latin-speaking nations could in return offer similar inducements to students from the North. In these special schools young men from the United States intending to go south and young men in the southern countries planning to come north could meet, and, while preparing themselves for their work, acquire that personal acquaintance which contributes so largely to success.

Another suggestion: While a large vocabulary is of course desirable, still comparatively few words are absolutely necessary for the carrying on of conversation and correspondence. A few months ago I suggested to a number of representatives of Latin America the advisability of attempting to introduce into each of the two languages the more important words of the other language. The suggestion received so much encouragement that I venture to submit it here. Five hundred English words introduced into the Spanish dictionary as synonyms for Spanish words having the

same meaning, and the introduction of a like number of Spanish words into the English dictionary would lead to the gradual absorption by people of all the countries of the most necessary words of the two languages, and would make it easier for representatives of the different Republics to talk to and understand each other without special training. Even a smaller number of words might be selected as a beginning. If the suggestion commends itself to this congress, a commission can be appointed to formulate the plan.

The opening of the Panama Canal has accentuated the possibility of larger trade between North and South America, and the interruption of existing lines of transportation has made more obvious the necessity of cooperation between the United States and Central and South America in the establishment of trade routes.

Secretary McAdoo has taken up the matter and is endeavoring to secure authority to establish a Government controlled merchant marine, for the double purpose of laying out new trade routes and providing against interruptions like those which have occurred during the past 18 months. I am sure that all of our neighboring Republics will give hearty commendation to the plan, and I hope that the Governments of Central and South America will consider the advisability of adopting a similar policy. If each Government represented here will act to the limit of its ability a new impetus will be given to inter-American traffic, to the benefit of all.

The establishment of the same monetary unit throughout the Western Hemisphere has long been discussed, and there is no doubt that it would greatly facilitate exchange between the countries. The currency law now in force in the United States has, by authorizing the establishment of branch banks in foreign lands, greatly aided in the improvement of trade conditions; but as it will require some years to realize to the full the advantages made possible by this law, it is worth while to consider whether it would not be wise for the American Governments to facilitate exchange by an arrangement under which they would cable to each other deposits made with them to cover foreign purchases.

I ask your pardon for repeating here a suggestion which I made last June at a banquet given in connection with the Pan American Commercial Congress, then assembled in Washington. It is that the Government of the United States should, if desired by any of the Republics of Latin America, underwrite bonds issued by them for the development of their resources. During my connection with the State Department I had opportunity to learn of the enormous burden thrown upon the smaller Republics of Central and South America by the high interest rates which they were compelled to pay, and I became convinced that these high interest rates not only worked an injustice to the countries that paid them and retarded the proper development of those countries, but that these loans, often the best that could be secured under existing conditions, sometimes caused insurrections and revolutions. After dealing with these conditions officially for two years I reached the conclusion that the Government of the United States could show its good will toward Latin America in no better way than by playing the part of a prosperous friend to these Republics, by lending its credit to support loans necessary for legitimate development work. The United States, being able to borrow at a low rate, could accept the bonds of neighboring Republics drawing a much lower rate of interest than those now issued, and hold them as security for its own bonds, issued at the normal rate. To illustrate what I mean, let us suppose a case. If one of the Republics of Central or South America, now paying 6 per cent interest or more, desired to enter upon some work of development, it could issue its bonds drawing, say, 4½ per cent, and our Government could accept them as security for its own bonds drawing 3 per cent, or such higher rate as the market demanded, the difference between the rate paid by the borrowing Republic and the rate paid on the United States bonds to be turned into a sinking fund to retire the development bonds. This plan would give to the borrowing countries the advantage of the credit of the United States and enable them to make a large immediate saving in interest, besides the saving that would accrue to them in

the retirement of their bonds. Such assistance could be rendered by the United States without any appreciable risk, and it would not only aid the Republic assisted but it would furnish conclusive proof of this country's disinterested friendship.

This congress has already under consideration the possibility of cooperation in the defense of the Western Hemisphere as embodied in the proposition recently submitted by the President through Secretary Lansing, which contemplates a joint convention providing for investigation of all diplomatic differences and the arbitration of boundary disputes among the Republics of America—a convention which will go far toward removing the possibility of armed conflict between them. This evolution of the Monroe Doctrine, enforced by the United States alone, into Pan Americanism, supported by all the American Republics jointly, will not only insure solidarity of sentiment but will, by the union of their strength, lessen the expenditures necessary for their protection from possible attempts at invasion, especially since the danger of invasion is decreased in proportion as the pressure of population in Europe has been reduced by the enormous loss of life occasioned by the war. The proposed convention between the American Republics will also make it certain that the Republics of the Western Hemisphere will not, by participation in the forcible settlement of European quarrels, surrender their right to exclude European nations from armed interference in any disputes that may arise between the American Republics.

In conclusion permit me to express the deep gratification which I feel at the spirit of cooperation and friendship which have made possible the treaties already negotiated between the United States and the Latin-speaking Republics. The plan providing for investigation of disputes of every character was submitted to all of the nations of the world at the same time, but to Latin America fell the honor of first accepting the proposal. The Republic of Salvador signed a treaty of this kind on the 8th of August, 1913, and Guatemala, Panama, Honduras, and Nicaragua followed in the order named. It was not until after these five treaties had been concluded with Latin American Republics that the first treaty with a European nation was negotiated—viz, the one with the Netherlands, signed on the 18th of December following.

We now have 30 of these treaties connecting us with nations exercising authority over three-quarters of the people of the globe. Nearly all of the Republics of Central and South America are included in the 30 countries, and the plan embodied in these treaties has been followed in the treaty recently entered into between Brazil, Argentina, and Chile.

These treaties, being all inclusive, leave no dispute which can become the cause of war without a period of investigation, and it is confidently hoped that this period of investigation will in every case enable the countries to reach a satisfactory agreement.

And when could the example set by the western Republics be more timely? While Europe, rent with passion, is in the throes of a struggle more bloody and costly than any which the world has before known, peace prevails in the Americas. On the north of us there is an unfortified boundary line of 3,000 miles and our Nation has relieved our neighbors on the south of any fears that they may have had of invasion or conquest by us. Nor is our Nation alone in giving evidence of peaceful intentions. On the boundary line between Argentina and Chile there stands an heroic figure, the Christ of the Andes, erected by joint contribution of the citizens of the two Republics, a proof of present amity and a pledge of future friendship. God grant that all the American Republics, one in their reverence for God and in their worship of His Son, identical in their aspirations and similar in their governmental methods, may in the spirit of brotherhood forever cooperate in the advancement of the material, intellectual, and moral welfare of the western world—honorable rivals in helpfulness and service. They are joint tenants of a new land, neighbors in a new country, and are united by ties of interest as well as by ties of sentiment. "What God hath joined together let no man put asunder."

Adjournment.

SESSIONS OF SUBSECTION 3 OF SECTION IV.

NEW WILLARD HOTEL,
Tuesday morning, January 4, 1916.

Chairman, EDWARD K. GRAHAM.

The session was called to order at 9.30 o'clock by the chairman.

The CHAIRMAN. Ladies and gentlemen, Dr. James, the chairman of this subsection, has been called home and will be unable, therefore, to preside today. It is my pleasure to announce the first speaker, President McVey, of the University of North Dakota.

THE RELATION OF THE UNIVERSITIES TO PUBLIC SERVICE.

By FRANK McVEY,

President of University of North Dakota.

It is customary to begin a paper on universities by reference to their long history, the contributions they have made in men and ideas to the national life, both in this country and abroad, and the part they are playing at present in maintaining the ideals of civilized people. There is no argument to be made on this point, and the evidence supporting the contention may be waived. On the other hand, the public service as a phrase designating the newer attitude of government, is certainly modern in the wider meaning given to it in these days, for it points to a relationship of cooperative effort with every increase of intelligence. The contributions of the universities to this service, great as they have been, are more or less indirect. The government, representing public service, has had but little immediate contact with the universities either now or in the past. Men have gone from college ranks to fill positions in government service, but the immediate relation between the university and the public service, has remained a dream, waiting for the master touch to make it a possibility for the future.

Even in the field of agriculture, the creation of the experiment station originated from the government side and imposed by it upon the agricultural colleges of the country by congressional act. Just to what degree can there be a relation between the government and public service that differs from the conventional one now existing? The approach to the query may be made by the long-distance method of first stating the conditions and then enumerating some of the conclusions that follow from the conditions.

In the biography of John Hay recently published, there is a description of Lincoln's meeting with hordes of office seekers, who without recommendation other than their own want, made their claims known for the many offices created by the numerous emergencies of the war. Lincoln's patience and protest that he must see them all, for they were the common folks and God must love the common folks for he made so many, was the great man's way of dealing with an impossible situation. The right of office holding still continues as enunciated more than 50 years later by an editor who states that the platform of any of the great parties for the campaign of 1917 should be proficiency, protection, prohibition and plunder.

We still pay the price for the earlier ideas of a Jacksonian democracy based on the essential equality of all men and the genetal view that any man can do the job as well as anybody else when it comes to a public office. While this view prevails in many places the world has marched on to the changing of increasingly complicated machinery in industry and government. Almost without knowing it, cities have enlarged their functions, the States are now undertaking enterprises of many kinds and the Federal Government adds daily to its duties. In nearly every instance these enlargements of government can be traced to the contributions made by the physical and social sciences. In the field of sanitation, the applications of the principles of electric energy to industry and the contributions to the betterment of agriculture and manufacturing, the biological, chemical, and physical sciences have made huge contributions. Certainly anthropology, sociology, and economics have placed mankind under lasting obligations for the bestowals they have made to the more intelligent dealing with immigration, housing, marketing, transporting, and other distinctly social problems. The contrast between the government functions of Lincoln's day with those of the present are very great indeed, and with the passage of the 50 years has come the necessity for trained men to meet the requirements of social endeavors. From the eighties on through to the present a lively belief in the curative power of legislation has endured with the coming and going of legislatures and congresses.

The belief in mere legislative act is, however, passing and two conclusions are taking hold strongly on the men who are near the problem. One of these is, that legislation in itself accomplishes but little and especially so when it is badly formulated. The other conclusion is formulated in a truism that at the outset, in the making of new laws, there must be grasp of the problem and clear expression of it in the language of the statute. It is now pretty clear that the enacting of legislation is a difficult task, requiring widespread knowledge of what has been done elsewhere, as well as an appreciation of constitutional and statutory pitfalls. This difficulty has been recognized in some of the States by the creation of the legislative reference library.

Little by little under the influence of men, sometimes with one idea and sometimes with another, fragmentary social machinery has been built up in city, State, and Federal governments without as yet awakening any great national understanding of what it all means and the real necessity democracy is under to know what it is really attempting to do. The connection the universities have had with the movement for more intelligent government is, as said at the beginning, an indirect one. From the universities have come the men who of their own initiative, in most cases, have developed these miscellaneous attempts at better government. The work of McCarthy in Wisconsin, Cleveland and Allen in New York City, and Johnson and Acker in North Dakota, point the moral to this tale of democratic law making. Without any possibility of contradiction the legislative reference libraries have materially advanced good government by giving it an ideal and a clearer purpose.

In consequence of this complication of government the blunders of the inefficient man do far more harm than they did in the days of simpler organization. The great corporations of the country long ago recognized this fact. Their managers took steps not only to find men to bring order, but who could continually enlarge and maintain the machinery of better management as that machinery of management grew more complicated and difficult to use. In response to this need private salesmanship schools flaunt their advertisements before every reader and in a more modest way the universities now call attention to their facilities for training men for business. Still the touch of university and government is missing and the bringing of the two in contact is slow. The reason for this situation may be answered in a number of ways. Public officers are not in the majority of instances college men and they resent what they call interference in their offices on the part of the universities. On the other hand the university has not had a really helpful plan to suggest other

than to assist the public service by recommending more or less efficient students in need of temporary employment. The work of the Municipal Bureau in New York City has pointed a way that has the advantage of really working. But some other plan must be found if it is to meet immediate needs because the amount of money required to make the New York City Bureau plan work is larger than can be had by most universities. In fact, endowment of such a system has many disadvantages that are at once apparent to the student of this problem.

I am taking it for granted that a plan of cooperation is not only desirable but actually necessary if the larger continuance of democratic government is to grow in the directions that appear so promising at the present time. The public does not appreciate the gravity of the problem, nor display the wisdom to provide trained men to carry on modern government. Hence the first step in the development of the cooperative relationship is to provide a background of public opinion. Most of the State universities in this country have the means of constructing such a background of opinion by the utilization of extension lectures and class room instruction. In the course of a year or two systematic emphasis upon such a phase of public policy through speeches, interviews and press matter, would bring results that logically lead to the second step. At the present time governmental officers are out of sympathy with a plan of cooperative effort. Their conversion is a matter of careful statement of advantages and the understanding that there is a public opinion abroad which really wants such a thing done. The third part of the problem is the supply of young men that can be relied upon to meet the call for governmental apprentices. This is the first problem of the university. It has been the experience in many universities where men have been wanted for given fields of work, that a little effort with a small amount of publicity has produced a fair crop of novitiates. With the much wider and steadier call for men, sure to arise out of a closer cooperation of the university with government offices, there should be no difficulty in meeting adequately this part of the problem. There is yet to be brought into actuality the touch between government and the university.

Public opinion having been formulated on this point a short statute will force the breath of life into the whole plan. The legislature might add a brief paragraph to the powers of State executive officers and boards in some such fashion as the following: The officers and commissions enumerated in such manner as the legislative body may enact are authorized to employ in their offices at salaries of not more than \$75 per month students designated by the heads of departments in the university of the State. Students so employed shall continue under the direction of the State officer for a period of not more than a year and the time so spent shall, upon the recommendation of the department in which the student is enrolled as a major student, be counted toward his graduation requirements. Here, in my opinion, is the bridge that can unite the two agencies that have so long worked side by side with but little cooperation.

There are instances where the spirit of this suggestion is followed. The Board of Public Health in Illinois and Wisconsin used advanced students as helpers in the biological and chemical work. Many of the geological surveys do the same thing, but so far as I am aware, outside the instance of the Municipal Research Bureau in New York City and the Wisconsin Legislative Reference Library, the work so done does not count toward a degree but is merely on a helper basis. If we may assume that the State would be willing to enact such legislation, and openings should be made for men in government offices, the university must reconstruct some of its courses and the State offices slightly modify the daily routine.

Too many of the courses now offered in colleges and universities have a wholly academic attitude. That is, they begin with a theory of government accepted by the instructor, whereas the student ought to have a grounding of fact before proceeding to the theory which after all is graduate work of an advanced character. The student

without this grounding of fact is confronted at once by the problems of function and the every day relation of government to the people in levying and collecting taxes, protecting property, life and health, so soon as he enters a State department. In other words, there is no object in placing the student in a Government department as an apprentice unless he has a more intelligent outlook than the average clerk already there. On the whole this viewpoint seems to be fairly self-evident and unnecessary of further development. Following such an elementary course should come the more detailed courses dealing with the actual problems of government. Thus, a student interested in accounting should have the elementary phases of accounting along with the elements of government and the special courses dealing with taxation and possibly the intricacies of valuing public utilities. With a mental equipment of that kind, he ought to be able to go into the tax commissioner's office and do a fair amount of clerical work on tax sheets. In addition he should accumulate a considerable knowledge of the way in which the tax problems of the State are handled. Returning to his university he ought to add much enlightenment to the work of his fellow students and at the same time raise his own work to a real appreciation of the State problems. This is merely a sample of the working of the plan.

Some difficulties stand in its way, such as lack of tact on the part of the student and failure to appreciate the opportunity. But these would befall any plan of cooperation. Slowly developed, tried in this office and in that the cooperative idea would give more and more ground as its advantages became apparent. The State would profit by the new ideas brought to offices by the apprentices and the university would come into a more sympathetic relation and understanding of government as a going thing. Each year would see a larger group of men trained not only in the academic side of the problem but in the practical as well. A still greater advantage would arise from the contact of the state officials and the professors in the university. Though at first the students working in Government departments might be small in number, yet the beginning of the relation would be established and in time a considerable body of men would be trained who had actual knowledge of government at first hand.

Other factors like those of permanency of office and pensions at the end of long and honorable service enter into the problem of better government. A democracy though, must be persuaded that its officers merit such treatment. The responsibility of the university is a double one: first, of providing well equipped men to do the work democracy wants done and second to show that it can be well and efficiently done. The entrance of the university into a cooperative relationship with the municipal, State, and Federal Governments marks a wide departure from the office-filling methods of Lincoln's day.

Hereupon, on invitation of Chairman Graham, President McVey took the chair and announced the paper on "The extramural services of State and endowed universities" by Edward Kidder Graham.

THE EXTRAMURAL SERVICES OF STATE AND ENDOWED UNIVERSITIES.

By EDWARD KIDDER GRAHAM.

President of the University of North Carolina.

The subject of university extension, as a whole, includes ¹ (1) all of the means through which the equipment of the university may be utilized by a nonresident constituency; (2) the use of that equipment directly by the State in the form of expert service; (3) certain activities carried on at the institution in the form of short-term

¹ Reber: School Society, Vol. II, p. 147.

courses, summer sessions, and conferences, for the benefit of persons so situated as not to be able to take the regular course. This paper will treat briefly that part of this whole subject that is concerned with making the resources of the institution available to nonresidents, and only to the phase of this part of it that is not concerned directly with extending vocational knowledge.

A satisfactory treatment of this aspect of university extension would include a résumé of the history of the movement in this country, a consideration of its aims and tendencies, the extent of its present development, its methods of administration, the chief activities through which it works, and its cost. Inasmuch as all of this information has been carefully collected and classified in readily available form in a bulletin, "University extension in the United States," issued last year by the Bureau of Education, it is not necessary to resummize it here, further than to say that, although the extension movement goes back to early days of the Nation, the form of it that concerns us is chiefly a development of the past 10 or 15 years; that it is administered in the large institutions through a separate division or department of its own, and in the smaller by a faculty committee of one of the regular departments; that its characteristic divisions are those of correspondence study, local classes, lectures, debating and public discussions, and general welfare. These main means through which the university extends its knowledge and point of view to the people at large are variously developed in extent and emphasis as will be immediately evident when it is said that the estimated cost of extension in the institutions where it is definitely organized varies from nothing a year to \$200,000.

Its development has been made notable not more by its successes so contrasted against their somewhat somber and conventional academic background as to appear sensational, than by its failures. Even now the university mind, and the public mind as well, is not wholly clear as to the function and value of extension in the university as a university. At the national extension conference in 1915, Dean Reber of the University of Wisconsin reported that "the status of university extension in this country is still more or less indeterminate; its methods, even where most highly developed, are to a degree experimental." The words extramural and extension, in themselves, suggest certain difficulties that inhere in the movement. Extramural suggests the concept of the university as a walled-in community living in an atmosphere rarified by high thinking, and saved from the possible odium of exclusiveness by the fact that such of its benefits as are portable may be carried to those who dwell without the city gates. In much the same way the word extension connotes attenuation and the superficial spreading out that is precisely contrary to the idea for which the university stands, and the idea that it exists to make prevail. But whatever may be said as to the disadvantages and dangers of the university's actively popularizing its ideas and ideals through extension, as to its essential superficialities, its taint of demagogery, its immature busy-ness with trivialities, its diverted devotion from its own sacred and unique trust—when all doubts and difficulties are summed up, the conviction remains that the final establishment of university extension as an altogether true and worthy university function is inevitable, because it is fixed in the nature of the relation of the institution and the truly efficient democratic state.

It is out of this fundamental relation of the American university to the American State that university extension presents itself not as an excrescence on higher education, but as its normal development toward the expression of the full and fruitful nature of both the university and the State. For what most arrests the attention in a review of the 15 years that extension has grown up as a part of an educational system originally molded by aristocratic tradition, is not so much the isolated fact of this extension of the university's resources, as the more significant fact of both the extension and intension of all of the instruments of education. University extension is just a phase of the general movement of educational liberation, through which the true genius of the Nation seeks expression. The tight little idea that education is the con-

cern of childhood and certain rigid formalities of place and plan has broken down, and social centers, correspondence schools, chautauquas, evening classes, demonstration agents, continuation schools, Y. M. C. A's., institutes, study clubs, and hundreds of similar agencies more or less organized are carrying whatever instruction people want directly to the people who want it, wherever they may be found.

And so within the educational organization itself the same extensive enlargement of ideals is seen; in the upgrowth of the great scientific schools and technical colleges associated with the university, the manual and commercial high schools, the development of the municipal universities, and of the summer schools; and in the curriculum of the traditional college itself, now extended to cover what to the old time scholar is such a multitude of crimes against culture as to make the term Bachelor of Arts seem the absolute limit of verbal irony. The point of emphasis here is not to praise the fine things of a more democratic education at the expense of the fine things of what may be loosely called aristocratic education. What needs clear understanding is that we are considering in the extension activities of higher education not so much this particular phase of extension as a deeply significant movement to saturate the whole people with the upward tendencies and convictions of education as the way out to making the best possible individual living and living the best possible individual and State life. Our contribution to this ancient problem of civilization is to be not in creating any strikingly original philosophy of education, but in our constructive ability to evolve an institution and a practical system and policy adequate to this fundamental task of getting the life-giving blood of education to flow in wholesome vigor and just balance to each utmost fiber of the body-politic. It is in the complete revelation that education is life, and not only in seeing this clearly and seeing it wholly, but in so actualizing it.

The unifying institution, and its function and its policy have emerged now, with some clearness from the remarkable quarter century that lies immediately behind us. It was our tremendous experience in conquering this continent and constructing its giant enterprises of business and government and education, and not the democratic machinery of government that revealed to us the great truth that life is not compartmental and that education is not compartmental, but that each is a unit. We have thus come to accept as natural certain associations that formerly would have been considered somewhat weird; industry and research, economics and philanthropy, suffrage and biology, war and chemistry; and so too, not only science and religion, but vocational and cultural, material and spiritual. These phrases do not now suggest antagonisms so much as cooperative divisions in the unity of life, whose connections were discovered and clarified through the medium of education. And this is the great function of the truth of education; to give to life this freedom to circulate, and to cooperate, and so incline society to higher and more permanent levels.

The university in that it alone can fully and completely function in realizing the aims and aspirations of democracy is the representative institution of the modern State. The higher education for which it stands is not high in the sense of aloofness nor separateness—quite the contrary—nor is its primacy as an institution predicated on the assumption that impulses for progress are from the top down. They are neither from the top down, nor from the bottom up, in the sense of being dogmatic as to the impulse of their inspiration. They are circulatory through all the veins and arteries of all parts of the body, these being equal members one of another. Its service is to all alike, not because all are of equal capacity and use, but because all are equally worthy of its service. Its mission is not to serve primarily the distinguished, not to serve primarily the mediocre; nor the poor in preference to the rich, nor the strong to the exclusion of the weak; it seeks to create the full and abundant life, and this not in any democratic sense, nor philanthropic sense, nor efficient sense, nor sentimental, nor class or caste sense, but because life is a unit, and is striving to be whole and wholesome, and made up of the whole and wholesome parts. This happy healthful-

ness of the social organism depends upon the open freely flowing avenues of life of which the university is the living organic center.

There can be no question as to whether such an institution shall have extension and extramural activities. It will if it has life. There is a question as to how far its vital passion to extend is to be liberated outward, and what particular means to this end it shall adopt and emphasize. This is what is "indeterminate" about extension, and will be so long as the university's life is fluid and flexible. But because extension is inherent in the expansive nature of the truth the university embodies, and because of the vital relation between the university and the State, extension is as truly a part of the university ideals as research. The true university spirit requires an unconquerable, uncompromising passion for the discovery of new truth for its own sake; it requires also a no less vivid passion for propagating through the youth it instructs the best that has hitherto been thought and said in the world; and it no less requires in the same spirit of free and complete circulation that it extend and release this truth without let or hindrance through the people whose institution it is, that it may quicken them with the creative spirit that it supremely cherishes, and be in turn quickened by their creative and fructifying spirit. In this way it not only "turns," in Arnold's phrase, "a stream of fresh and free thought" upon the State's notions and habits; but the State turns on its stock notions and habits and equally revivifying stream of fresh and free thought. So the university would lose none of its fineness and power, its sweetness or light; but it would gain what James warned it it must have if it would hold its leadership—"the robust tone." This would come through no deliberate popularization, but as a by-product of a healthy functioning with the State in the interest of the full and free circulation of the truth it serves.

It is out of this concept of the university at the center of the life of the State that the policy of extension evolves, not negatively, defensively, condescendingly, or doubtfully; but normally, with a clear, intelligent, aggressive, constructive purpose, properly adjusted to what the institution has of value to extend, the means at its command and the needs of the community it reaches. These questions of what avenues the university shall open and what extension activities it shall emphasize are practical matters to which a great variety of answers are made—from those institutions that confine themselves to the single activity of lectures to the elaborately complete organization of the University of Wisconsin. In the main the divisions of extension work, where it is definitely organized, are the same and are entirely familiar. What is not so clear is how successful they are in reaching into the life of the State, and what effect they have on the life of the institution.

Instead of attempting to review the whole field, it would be serviceable perhaps to sketch briefly the extension activities of the university with which I am most familiar. If such a sketch proves helpful it will not be because of anything of remarkable merit in the work outlined, but because the institution presents characteristic opportunities and difficulties to a degree that make its problem of extension unusually typical.

This university is one of the oldest of the State universities. Unlike the newer institutions of the West, it was not the product of the people; but it was built up by a small group of devoted men. It was classical in type, and is so still. It has over a thousand male students, two-thirds of whom are in the college of arts and science. It is situated in the country, and in a State without a city of over 40,000. It is separate from the State A. and M. college—"by choice," as the spinster said—and lived to regret it, perhaps. Its work has been of a standard of sound scholarship and modernity that have given it undisputed recognition in its section. Its appropriation from the State for maintenance is \$115,000 a year, and its total income something over twice that sum.

Its extension work is of a very recent development, having been organized in 1911, although before that date the faculty gave lectures outside whenever called upon. The word "extension" came into the community vocabulary as an active principle in university life three years ago, when the extension division was reorganized, conceived a definite policy, and consciously set about realizing it.

It is administered by a faculty committee under the direction of the librarian. Its activities are grouped in seven divisions:¹ (1) general information, (2) public discussion and debate, (3) correspondence study and home reading, (4) lectures, (5) municipal reference bureau, (6) educational assistance, and (7) county surveys. Each of these divisions is administered by a chairman. No one is required to do extension work, and no one is paid for extension services, except the assistant director, who is a full-time man.

The extent of these activities may be quickly outlined:

1. *General information.*—The purpose of this division is to make the information of the library and the faculty as available as possible. Answers to questions are sent direct from the library, or the questions referred to those specially qualified to answer them; pamphlets, collected clippings, and books are loaned direct to individuals, and package libraries of special subjects to clubs. One thousand and forty-five special inquiries of this sort were received the past year, and 1,196 books loaned.

2. *Public discussion and debate.*—The object of this division is to stimulate public discussion, not only in the high schools, but among clubs and societies of all sorts. Its chief success has been in organizing and operating the State high school debating union. Three hundred schools are enrolled in this contest, involving 1,200 debaters from 90 of the 100 counties, and speaking to a total audience of 75,000. A special bulletin on public discussion and debate was published, weekly debate outlines are published in the paper, and bulletins issued on the topic for State debate. Something over 3,000 letters concerned with public discussion were sent out by this division, and 2,600 documents circulated.

3. The correspondence study division is notably unsuccessful, largely, no doubt, from the lack of funds to promote it. Credit courses are given for which a fee of \$5 is charged. Less than 50 students are enrolled in the 32 courses offered.

4. *Lectures.*—The demand made upon the lecture division is far more than the faculty lecturers can meet. One hundred and thirty-three engagements were filled in two-thirds of the counties of the State. A bulletin of lectures, designated as popular or otherwise, is issued, embracing 130 topics. The division owns a lantern and a stock of slides.

5. *Municipal reference bureau.*—The State has a legislative reference bureau under the administration of the historical commission, but a special place remains for a municipal reference bureau, concerned with the problems of small and growing towns. Information is supplied from this division concerning charters, franchises taxes, commission form of government, and city manager, playgrounds, and special investigations undertaken concerning school systems, chambers of commerce, markets, and cooperation between the town and the country, etc.

6. *Educational assistance and information.*—This division is of obvious importance in the extension service of a university, and is especially emphasized. A letter from the school of education to the teachers of the State is sent weekly, discussing some simple problem of school administration; school surveys, and advice on special problems large and small, some requiring visits of several days have been made; a teacher's bureau with free service has been maintained; and two or three special bulletins have been issued.

7. A final activity of the bureau, that is the most important from the extent and success of its work, and that is different from the usual extension activities, is that rather vaguely called "county surveys." This is under the direction of the professor of

¹ See report of the director, Dr. L. R. Wilson. President's report, 1915.

rural sociology and applied economics, working with county clubs in the institution, federated into a general State club. This division is engaged in assembling, disassembling, and studying information about the State. Its studies have been based on direct field investigations, questionnaires, and the study, analysis, and interpretation of State, departmental, and Federal reports, county papers, court records, etc. Its studies so far have covered 178 subjects. In these studies the State is compared with the rest of the States of the Union, and ranked accordingly; the facts are ascertained for each county and the counties ranked; the results are mapped so that the relative progress of the counties may be easily seen; and the results synthesized in a study of origin, consequences, and remedies. Twenty-one counties of the State have been completely treated. Every county in the State is involved in 121 of these studies. (Subjects—Illustrations chosen at random: Negro churches and Sunday schools in Orange County; Corn production per acre and per inhabitant; Municipal abattoirs; White farm owners; Taxable wealth in 1913 per capita; Live stock farming in North Carolina; Homicides in North Carolina and in the United States.) Surveys fairly complete have been made of 20 counties.

To give the necessary publicity to this work a News Letter is published each week in an edition of 7,000 copies, which differs from the usual clip-sheet in that its items are concerned not with news about the university but with what the university has found out. Two bulletins have also been issued and distributed widely; one, a syllabus of home county studies, and the other a syllabus and guide for the study of local geography.

The total cost of all this work—some part of which touched every county in the State—for the year was \$3,000. Money is necessary to conduct a successful extension bureau, but it is not the great essential. The essential thing is here precisely as it is in vital research and vital teaching—the passion of indwelling truth to find expression. To the “zeal, accuracy, fullness, and authority” of the ideal university as described by Birrell, it adds the vivifying, humanizing quality of sympathy. What it will do will depend not on its facility to imitate the devices of others, but on its sanity, its deeply centered poise, its capacity to think out its own problems of service, the sincerity of its impulse to serve through.

I am under the impression that none of the high things for which the college I have been describing stood has suffered; on the contrary, I think, though the time is too short for safe judgment, its life has in every particular been quickened by a deepened conviction and inspiration.

The following papers were hereupon presented:

Extramural activity of universities from the governmental point of view, by Herman G. James.

Extramural services of State and endowed universities, including university extension, from governmental standpoint; by John A. Fairlie.

EXTRAMURAL ACTIVITY OF UNIVERSITIES FROM THE GOVERNMENTAL POINT OF VIEW.

By HERMAN G. JAMES.

Associate Professor of Government and Director of the Bureau of Municipal Research and Reference, University of Texas.

For more than 250 years after the first university was founded on this continent the activities of our American universities were virtually wholly intramural, that is,

limited to classroom instruction of students in residence. It was not until the university extension movement developed in the last years of the last century that extramural activity of universities began to receive attention. But the early extension work of our universities did not have any special significance from the governmental point of view. It served the fundamental interests of the State indeed, involved in the whole scheme of education, but only in the same way as did the resident classroom and lecture work. The undertaking of extramural activity directed specifically to the service of the Government was an even later development, one which may indeed be said even now to be in its initial stages.

An attempt to enumerate in detail the steps that have already been taken by American universities in this direction would prove both difficult and unprofitable, and this discussion will therefore be limited to a consideration of some of the many ways in which universities could be of direct service to the Government, bearing in mind that many of these undertakings have already been launched by one or more of the universities in this country. It may be observed at the outset that such work is obviously a field of activity which all universities receiving governmental aid should undertake as a matter of duty to the State that supports them. But there is no reason why all universities, even those privately maintained, should not help in this important work, particularly as many publicly maintained institutions are not now and are not likely to be in the near future in a position to cover the ground adequately.

For convenience of presentation we may divide these extra-mural activities of governmental importance into three general classes corresponding to the three general units of government to be served, the Federal Government, the State government, and the local government, although the kinds of service to be rendered may in many instances be the same. Generally speaking, indeed, we may say that the extramural activities which universities can make of special value to the Government may all be included under the general head of rendering expert opinions on matters on which the governmental units are called upon to decide and act. The mere statement of the thesis of this paper in that form immediately opens up a conception of its immense possibilities and extent and precludes the possibility of doing anything more within the limits of this paper than merely enumerating some of the more important matters that come to mind.

Let us look for a moment at the 10 great departments of administration found in our National Government, the departments of State, Treasury, War, Navy, Post Office, Interior, Justice, Agriculture, Commerce, and Labor. The heads of these departments are not supposed in theory nor are they in practice chosen because of technical expert acquaintance with the subjects that fall in their department. Yet they are continually called upon in their capacity as advisers to the President, and as administrative heads of the departments to render opinions and make decisions which must be based on such technical knowledge. This technical information must come from some source, and in many cases the best source of such information would or should be a council composed of the university professors whose specialty lies in that particular field. We may except the departments of War, Navy, and the Post Office as dealing with matters that do not fall within the field of university instruction and research. But everyone of the other departments deals with matters on which a council of university professors should be able to give sounder and safer advice than could be gotten in any other way.

To illustrate: The State Department, which seems on its face to be far removed in its activities from the realm of university work, is continually taking action which should be based only on a most thorough knowledge of certain facts. The whole realm of international law, which is just at the present time the most important and yet delicate field of Federal activity, is eminently a matter for consideration by a council of experts. International law in practical application is much more than a

mere collection and presentation of cases and precedents. It is in a very large measure an international philosophy based on general principles and tendencies. The counsellor of the State Department and his corps of assistants can well seek out and compile the precedents on a given case. But when a case arises which has no clear precedents, sound deductions would be much more likely as a result of the joint opinions and deliberations of a large group of experts in that field, such as the professors of international law in our universities ought to be, than if the deductions represent the opinion of merely one man. Again, there is scarcely one of the important treaties that are framed by the President, with the advice of the State Department, for submission to and ratification by the Senate, but involves fundamental economic and social considerations. The Secretary of State is not selected because he is an eminent economist or sociologist, nor are the President and the Senators elected on any such considerations. The treaty-making power being practically unlimited, and the House of Representatives having no constitutional right of participation in that power, it is particularly important that the views of experts be secured before enacting treaties of far-reaching economic and social significance. Such experts are to be found, if anywhere, among the body of men who spend their lives investigating and teaching these subjects in our universities.

To take another illustration: The Attorney General of the United States, in rendering his opinions, has to pass on many questions of constitutional law that have not been settled by the courts. Such questions, as is well known, frequently involve personal views on economic and social matters, just as the great constitutional cases in the United States Supreme Court have been decided on personal views on such matters. Now, the opinions of the Attorney General, though in no sense legally binding on the courts, should have, and I believe would have, much weight with the courts if they were based on the result of careful scientific investigation of the fundamental social and economic questions involved. Where can we find men trained to give expert advice on such matters if not among the professors of those subjects in our American universities?

It is needless to continue the enumeration of activities of the Federal Government in which expert advice by university professors should be of the greatest value. I have mentioned two which at first sight appear perhaps farthest removed from the field of action of university men. Should we consider the activities of the Departments of the Interior, of Agriculture, of Commerce, and of Labor in detail we should find an ever-increasing number of matters on which the advice and opinions of professors should be of prime importance. It would be perfectly feasible to form a council of the recognized authorities in the various fields whose advice could be sent in writing without involving a serious break in their ordinary university activities. For such advice the Federal Government should be willing to render financial aid to the universities, just as it now renders financial aid to State universities teaching agriculture and the mechanic arts and including military training in their curricula.

In addition to this advisory function of university professors their capabilities could with benefit be enlisted in service on a variety of commissions in an active capacity. Investigations in the States on behalf of the Federal Government of all matters falling within the jurisdiction of the National Government could to advantage be put under the supervision of a competent professor in the State university, or if there be no properly trained man in such university, then under the supervision of a professor in a private institution. Now it will at once be objected, and that objection will be more and more insisted upon as the scope of this activity is developed, that if university professors are to perform these functions they will not be able to devote any attention to the intramural activities of the university. To this I would answer that it would be better for the university, for the professors, for the students, and for the Government to have two professors of a given subject each devoting one-half of his

time to intramural and one-half to these extramural activities than to have one man who gives his full time to the former and none to the latter. The additional cost to the university involved in such an arrangement should of course be borne by the Government, which is the main beneficiary thereby. The students, however, as well as the professors, would be gainers, the latter in the broader field of activity opened up to them, the former in having as teachers men who were in continual contact with actual governmental problems.

We may leave this brief suggestion as to the ways in which university professors might be of benefit to the National Government and consider in the same way some of the more obvious means of making the university of direct service to the State in which it is located. The field is at once seen to be even wider, because the possibility of personal consultation with the Government and immediate participation in its activities is made much greater because distances are less.

One of the most striking developments in State government in recent times has been the increase in so-called social legislation and in the growth of instruments of social and economic control. In fact it may be said that almost all important legislation has an economic and social significance which can be properly grasped only by careful students of the subject. On the legislative side therefore it would obviously be an enormous advantage if every proposed measure of that nature could before passage be submitted to a council of experts for examination and report. Obviously such a council could not in a democracy be given any legal power of approval or disapproval. But most pernicious legislation of that character would never be passed if the members of the legislature could be furnished with the impartial expert opinion of a group of men who had carefully investigated the issues involved in the measures. Such a group of men can probably best be found in each State among the university professors who devote their time to a study of such questions. This would be a legislative research and reference bureau par excellence.

On the administrative side, furthermore, there is a great need for expert advice and services in almost every conceivable branch of activity. Here experts are needed not only in the field of government, economics and sociology, but in practically every branch of scientific knowledge. The Public Health Service, the control of public utilities, the conservation of minerals, fish, and game, the revenue administration, are only a few of the many activities that might be named where expert advice and participation are essential. Our universities should have on their faculty such experts and they should be available in part time for the service of the State. Examining boards for the various professions and callings in the State for which the passing of examinations is required should be composed, in part at least, of university professors. The whole civil service of the State appointed on a merit basis of competitive examination presents a field where professors could profitably be employed as examiners, regular or special.

One other important matter may be mentioned in connection with State government, and that is the matter of constitutional amendments and revision. Constitutions, like clothes, become old and threadbare and need repair and renovation if they are to render their best service. At periodic intervals their revision should be regularly considered. In this important work university professors should take a leading part.

Having thus touched upon some of the more important fields of possible extramural activity in the field of State government, we may turn to the field of local government, where the possibility of effective university work along those lines is perhaps the greatest. Even county government presents some opportunities along this line, although the limited scope of action accorded to the county and its intimate connection with the State government and administration do not leave a large field of independent governmental activity. But in the domain of municipal government a

wide opportunity for usefulness opens up to the university. Every university, at least every State university, and a fortiori every municipal university, should comprise a bureau of municipal research and reference devoted to the task of aiding cities in having the best kind of municipal government.

The directions in which this work may be developed are at least as numerous as were seen to exist in the realm of State government. Among them may be mentioned the following: To begin with, the preparation of a scientific city charter is one of the most important and difficult tasks that confronts the city. Where cities have the so-called home-rule power of framing their own charters, and that is rapidly coming to be the rule in the United States, the matter is commonly intrusted to a commission of local citizens who are of course wholly unacquainted with the first principles of charter drafting. The university should be ready to offer expert advice and assistance in that direction. Again, in the control of public-service corporations in the city, there is a lack of understanding of the fundamental facts and principles that should govern those relations. The university, through its municipal bureau, should be in a position to furnish model draft franchises and to send experts to the city to investigate local conditions and determine what charges are fair and what service reasonable. In the every-day administrative work there are problems arising which the city officials are not trained properly to solve, problems of engineering, of sanitation, of finance administration, of social-welfare work. In such cases the officials should be able to call upon the university for advice and assistance. A most important instrument of civic improvement to-day is the city survey. Such a survey to be effective must be properly directed and supervised. The university should furnish men who are trained to do that work.

Another useful extramural undertaking in this direction is the organization and management of a State league of municipalities for bringing the city officials into personal contact by regular conventions and publications. The State university is eminently the organ for doing this kind of work. On the other hand there is the work of organizing civic associations among the citizens to educate them to a realization of what is to be expected of good city government and how that expectation may be realized. Finally, may be mentioned the important work of providing regular correspondence instruction and institutes for municipal officials. Our American city officials are untrained in the duties of their positions when they go into the service and have no means of learning after they are in, except through the expensive process of learning by mistakes, for which the taxpayer has to pay. It is to be hoped that in the future the higher city officials will be trained by our universities before appointment to office, but that time is still a long way off, and until such time the universities should offer facilities for the untrained officials now in office to learn their business.

From even this very hurried and superficial presentation of the opportunities that are open to our universities to engage in extramural work of direct value from a governmental point of view, it can readily be seen that they could be of immeasurable benefit in improving the caliber of our governmental activity in every division. It is true, of course, that our universities are for the most part to-day not nearly as well equipped as they should be for this work, either in men or material facilities, but with a realization of the possibilities opened up in this still almost wholly neglected field will come the needed improvement. So far experience has rather tended to support the proposition that democracy and inefficiency are inseparable in a government. With the development of the university activities outlined herein, it is hoped and believed that we may eliminate in large measure the inefficiency of democracy without sacrificing any of the advantages thereof in which we all firmly believe.

**EXTRAMURAL SERVICES OF STATE AND ENDOWED UNIVERSITIES,
INCLUDING UNIVERSITY EXTENSION, FROM GOVERNMENTAL STAND-
POINT.**

By JOHN A. FAIRLIE,

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The subject assigned for this paper embraces all the activities of the higher educational institutions in the United States outside and beyond the system of instruction to the regularly enrolled body of students and the work of research and investigation forming part of the older established functions of the university staff. By including both of the terms—extramural services and university extension—it is evidently intended to cover university extension work which may be intramural, and also extramural services not definitely recognized as within the sphere of university extension work.

Many forms and varieties of such extramural services and university extension have been established. The definite organization and development of such activities have taken place for the most part within the past 25 years, and the movement shows an increasing acceleration during the last decade. It will, however, be worth while to note at the beginning some illustrations of extramural services of universities and of some phases of extension work which were in existence long before the recent movement. Indeed, it may be said that the recent movement is mainly a more conscious and deliberate organization and development of functions which have formed part of the work of universities from the earliest times.

Without going into the history of European universities, mention may be made of one of the early presidents of the oldest American university, Increase Mather, president of Harvard College, of whom it is said in his biography that his political and pastoral services were more powerful credentials to fame than his college presidency. These activities in fact took him away from the college a good deal, and that dissatisfaction in some quarters with such external activities of an educational leader is not a new thing is also indicated in a Massachusetts law of 1701 requiring the president of Harvard College to live in Cambridge.

Reference may also be made to John Witherspoon, president of the College of New Jersey (Princeton) from 1768 to 1794, who took an active part in political affairs during the War for Independence.

Nor is it irrelevant to note that 32 of the 55 members of the convention which framed the Constitution of the United States were men of academic training. Five came from English and Scotch universities—London, Oxford, Glasgow, Edinburgh, and Aberdeen; and others had been students at Harvard, Yale, Princeton, Columbia, and Pennsylvania.

Another illustration of extramural public services may be noted in the early history of the Law School of the State University of Michigan. For many years the faculty of that school was identical in personnel with the supreme court of the State, and this group—Judges Cooley, Campbell, Christianity, and Graves—have been styled the "Big Four" leaders in the early development of law and law teaching in the whole Mississippi Valley and the Lake region of the United States.

Many, if not most, of the professional schools in this country were conducted at first—and not a few still are—by active practitioners. But in such cases, the teaching work has been very often the secondary and the external activities were the primary interest. Indeed, the development and improvement of professional education has come about largely by requiring teachers in such schools to give their main attention, if not their whole time, to their educational duties in the institution. In this way a pronounced sentiment grew up against outside services by teachers in the higher educational institutions. And one of the problems connected with the

development of external and extension activities is to prevent it from hampering the most effective results in the regular work of the institution.

Some phases of educational extension work first developed in the United States independently of the colleges or other established teaching institutions. Beginning as early as 1831 the American National Lyceum aided in the spread of popular education by establishing lecture courses and debating clubs in many urban and rural communities. A local organization of special importance was the Lowell Institute in Boston, which originated in a bequest by John Lowell to provide for regular courses of free public lectures, which were inaugurated in 1839. The Lowell Institute lectures have been given by the most eminent men in America and Europe on all branches of natural science, political and social subjects, literature, and art. In addition, there were established classes in drawing, from which developed the Lowell School of Practical Design. Other local institutions of a somewhat similar character are the Franklin Institute and Drexel Institute in Philadelphia, the Brooklyn Institute of Arts and Sciences, and the Peabody Institute in Baltimore.

More direct university activity in the movement for popular education began with the establishment of summer courses of instruction during the long summer vacations. Harvard began summer courses in geology and field work in natural sciences in 1869; and courses in other subjects were added from time to time. Summer instruction in law was begun at the University of Virginia in 1870; and other subjects were offered in later years.

In 1874 the Chautauqua Assembly in New York began a systematic plan of popular education at first by summer courses of lectures, but later developed to include correspondence work and home study literary and scientific circles. This work ranged from the elementary to university grades, and was to a large extent prepared and conducted by members of college and university faculties.

The original Chautauqua was followed in 1876 by a similar summer assembly at Bay View, Mich.; and since then numerous "Chautauquas" have been established at many places throughout the country.

More specialized summer schools were also organized; as, for example, the Sauvier Summer School of Languages in 1876, the Chesapeake Zoological Laboratory of Johns Hopkins University in 1878, the Concord School of Philosophy and Literature (from 1879 to 1888), the Marine Biological Laboratory at Woods Hole, Mass., in 1888, the international Y. M. C. A. training school at Springfield, Mass., in 1887, and the School of Applied Ethics at Plymouth, Mass., in 1891.

The name University Extension is first definitely associated with a movement which began in England in 1873, and rapidly developed to a considerable extent in that country. An address on this English system before the American Library Association in 1887 led to the beginnings of similar work in several cities (Buffalo, Chicago, and St. Louis) in connection with the municipal public libraries.

In 1889, Teachers' College, later affiliated with Columbia University, offered elementary extension courses in science to the teachers in New York City and vicinity. A year later, the American Society for the Extension of University Teaching was organized in Philadelphia; and the following year similar societies were formed in Chicago, Cleveland, and Detroit. In 1891, the State of New York appropriated \$10,000 for university extension, by means of study clubs, traveling libraries, and other forms of home education. In December, 1891, a national congress of university extension was held in Philadelphia. At this meeting it was reported that in the four years since 1887 university extension in some form had been begun in 28 States and Territories.

The report of the United States Commissioner for 1891-92 includes statistics on university extension classes conducted by 7 State universities, 7 private universities and colleges, 4 local societies, and 1 State educational department. The largest number was given by the Philadelphia society—118 courses at 58 centers,

mostly in Pennsylvania. The University of Wisconsin gave 50 courses at 34 centers, and Brown University 35 courses at 17 centers. Other institutions gave from 2 to 16 courses at from 1 to 10 centers. In all, 318 courses were offered by the 19 institutions at 183 centers.

In 1892-93 extension courses were reported by 26 institutions, aggregating 418 courses of 3,022 lectures, with an average attendance of 56,601. The largest number of courses were in literature (128), history (119), natural science (50), and political and social science (48). More than half of the total number were given by the University of Chicago (125) and the Philadelphia society (106). Courses were offered by 6 State and by 18 private institutions.

Many of these early attempts were not established on a permanent basis, and in a few years a large proportion had ceased operation. In 1894-95 reports were received from 15 institutions. The most important work was done at the universities of Chicago and Wisconsin and by the Philadelphia society; and a smaller amount was given by the New York Board of Regents and the University of California. After this year no statistics were published by the United States Commissioner of Education.

Extension work was, however, actively continued by the Philadelphia society, by the universities of Chicago and Wisconsin, and to a smaller extent by other institutions. The ten years' report of the Philadelphia society in 1900 shows that extension lecture courses were given on the average at 64 centers each year (mostly in Pennsylvania and New Jersey), with a total of 954 courses and 5,643 lectures for the decade.

Summer courses had been begun at the University of Wisconsin in 1887; and other extension work was organized there in 1892. In the latter year Cornell University began summer courses; Columbia University largely extended its systems of public lectures; and the reorganized University of Chicago took over the work of the local university extension society, and at the same time organized summer courses on the same basis as the other terms of university work. Other colleges and universities gradually instituted and developed summer courses and some forms of extension work.

After 1900, extension work by universities and colleges was more thoroughly organized and attained increased importance. From 1900 to 1905, eight colleges and universities established organized systems of extension teaching; from 1906 to 1910, extension teaching was organized in 19 institutions; and from 1911 to 1914, 13 additional institutions were added to the list. As the work has developed, many institutions have reorganized and extended the system; while many other institutions have introduced some forms of extension work without any formal organization for this purpose.

The forms and methods of extension teaching have been changed and developed in many ways. Summer courses have rapidly increased in numbers and attendance; and much of this work is now conducted on the same basis as the regular university classes, including advanced and graduate courses. Other extension classes are sometimes conducted on the same plan as the regular university work, and sometimes in a more elementary and less formal manner. Short courses and public lectures are given in large numbers. Correspondence study forms an important element in some institutions. Other services include aid to debating societies, the distribution of package libraries, the maintenance of municipal reference bureaus, and other forms of civic and social welfare.

In 1912, summer sessions were maintained by 42 universities and 67 colleges in the United States. In 1914, summer sessions were conducted at 55 State universities and colleges; and 46 of these offered other short courses.

A recent report on University Extension in the United States shows that in 1914 there was organized extension work, other than summer classes, at 51 universities and colleges, and in 52 other institutions extension work was reported to some extent

without special organization. Of the 51 institutions with organized extension work 22 had a distinct extension department or division; in the other institutions extension work was administered by other departments, by a committee or by special methods. In 32 of these institutions correspondence courses were maintained; in 32 institutions extension lectures were given; in 35, extension classes were conducted; 21 institutions had departments of debating and public discussion; 22 institutions supported some form of public-welfare work.

Extension work is carried on to a considerable extent in some important institutions not included in the report noted above; and it is probable that more or less unorganized extension work is done at many other institutions.

The various forms of extension work and public service are undertaken both by State (and municipal) universities and by institutions under private management. In 1908, President Eliot, of Harvard University, wrote:

"The State University faculty has a stronger sense of direct responsibility to its State and a keener desire to be of direct and visible service to the learned and scientific professions, popular education, the characteristic industries, and the public administration within its State. It will therefore take active part through many of its members, in visiting secondary schools, holding short courses of elementary instruction at the university or at a distance from it, lecturing at teachers' institutes, women's clubs, grange meetings, and trade associations, distributing through numerous short-term students superior seeds proved at the university, and working on State commissions which need the help of experts.

"Such useful functions as these the faculties of the endowed universities in the East have been slow to assume. They have been inclined to reserve themselves for teaching and research at the seat of the university and to leave to others all sorts of "university extension" work. They are, however, improving in this respect, because they now realize that in a democratic society all institutions of higher education, whether endowed or supported from public revenues, are ultimately dependent on the public's appreciation of their services, direct and indirect, and on the resulting good will of the whole community. Hence the growth at endowed institutions of summer schools in theology, medicine and arts and sciences, of term-time classes for teachers in science, and of courses of popular lectures in divinity and medicine at times convenient for those who are earning their livelihood; and hence also the increasing participation of university professors in various forms of public work."

It may be said that since this was written, the activity of the endowed institutions have shown a marked increase. Two institutions of this kind, Columbia and Chicago, lead in some forms of extension work; and Harvard University and the other institutions in the neighborhood of Boston are by no means least in their activities. At the same time, it is perhaps still true that on the whole, the State and municipal institutions more generally provide a more formal organization and call public attention to their extension work.

There are considerable variations in the emphasis and relative importance of difficult phases of extension work at the various institutions. The largest summer schools are at Columbia and Chicago; but large schools have also developed at California, Cornell, Iowa State Teachers' College, and Tennessee. Organized extension classes are of most importance at the City College of New York, Columbia, Chicago, New York University, the extension courses in Boston, Minnesota, and Wisconsin. Correspondence classes are of large importance at Chicago, Pennsylvania State College, and Wisconsin. Short courses are largely attended at Illinois and Minnesota. The lecture system is highly developed at Wisconsin, Michigan, Columbia and Chicago. Organized public service bureaus appear to be most highly developed at Wisconsin and California.

¹ University administration, pp. 117-118.

A comprehensive analysis of the extension and extramural activities of all the universities and colleges in the United States would go far beyond the limits of this paper. It will be more profitable in the space available to give a brief survey of what is being done by a number of institutions where such work has been developed to an important extent.

COLUMBIA UNIVERSITY.

Extension work in the form of public lectures began in Columbia early in the nineteenth century. In 1892 such lectures were largely extended, by providing lectures at Cooper Union, the Museum of Natural History, and the Metropolitan Museum. More recently an Institute of Arts and Sciences has been organized, through which numerous lectures, music recitals and readings are offered for the benefit of the general public.

Systematic extension courses were given by Teachers' College in 1889, which was soon affiliated with the university. Beginning in 1898 such courses were given on a larger scale and in a more systematic way, and were also offered in cooperation with the Brooklyn Institute of Arts and Sciences and in the boroughs of Queens and Richmond. In 1902 an extension department was organized by the university, but the work was still carried on mainly in connection with Teachers' College.

In 1900 a summer session was established by the university, which has grown rapidly both in courses and students. In 1910 the other extension work was placed under the control of the director and administrative board of the summer session, and since then the work has been rapidly enlarged.

At the summer session in 1915, there were 512 courses and 5,590 students, by far the largest summer school in the United States. Extension classes are given in the afternoons and evenings and on Saturdays in most branches of university work by a corps of 200 instructors; and with a few exceptions these courses correspond to the regular university courses and are accepted for credit toward the university degrees. Special mention may be made of the courses in architecture, commerce, agriculture, and for executive secretaries. Extramural courses, some of which are accepted for credit, are also given at a number of places outside of New York, for 1915-16 in Bridgeport, East Orange, Freeport, Jersey City, Passaic, Paterson, Scranton, Springfield (Mass.), Stamford, Trenton, and Yonkers. The number of students in all such extension classes has increased from 1,312 in 1911-12 to 4,161 in 1914-15. For the year 1915-16 there are 3,030 students in extension classes at the university and 700 in extramural classes; and the total for the year is expected to be about 5,400. The Institute of Arts and Sciences numbers 1,600 members. No correspondence courses are given at Columbia.

Members of the Columbia faculties are actively connected with the Training School for Public Service, conducted by the New York Bureau of Municipal Research.

Attention may also be called to the public services of members of the Columbia faculties. In 1914, seven held positions in the service of the United States Government, nine under the State of New York, and eight in connection with the municipal government of New York City. Many of these were positions on advisory or investigating boards or as consulting officers, which did not prevent their active service for the university. One has been adviser on constitutional problems to the President of China; and one has been Counsellor of the Department of State.

A much larger number of the teaching staff hold important offices and committee appointments in numerous semipublic societies and associations, including such organizations as the National Tax Association, the Academy of Political Science and the New York Bureau of Municipal Research.

There is also a political laboratory and a legislative drafting bureau, organized within the university, whose staff actively aids public officers and private and semipublic organizations dealing with problems of legislation and public administration.

Important extension work and public service is also done in New York City by the New York University and the College of the City of New York. Late afternoon and evening classes are given; and special arrangements are made for municipal employees. In New York University graduate students cooperate with the city officials in the study of municipal problems. Members of the faculties of these institutions are also engaged in special investigation for city and State authorities.

UNIVERSITY OF CHICAGO.

Under the new management which began in 1892, the University of Chicago introduced a summer quarter as part of the regular work of the institution, and at the same time established a well organized department of university extension. The summer quarter developed rapidly, attracting large numbers of students from all parts of the country; and has in fact a larger attendance than the other three quarters. Extension work included lectures, class instruction, and correspondence courses.

In 1898 a college for teachers was organized, and two years later its name was changed to University College. This offers afternoon, evening, and Saturday classes in the down-town district. The number of students was 305 during the first year and increased slowly to 408 in 1908-9; but since then in a new location the attendance has increased rapidly. There are now 64 persons on the instructional staff; and in 1914-15, there were 150 courses offered, with a total of 1,213 students and 3,146 registrations. The requirements for these courses are the same as for the regular university work; and the courses count toward the university degrees.

Correspondence study has been more largely developed and reaches every part of the world. About 125 members of the faculty take part; and in 1914-15, 382 courses were offered, and were taken by 3,281 students. The courses most in demand are those in languages, mathematics, history, education, and economics. Credit is given for this work for admission, and for courses of college grade toward the bachelor's degrees on completing the minimum residence requirement of three quarters.

Since 1912 the lecture work has been turned over to the University Lecture Association. About 250 general lectures and readings are given during the year at half a dozen centers in Chicago and suburbs, including lectures at the university during the summer. The winter lectures are given in the evenings, in courses of six lectures.

Members of the university faculties also perform important public services outside of their regular work. A number hold offices in the State and municipal government; and these and others are also active in civic, philanthropic, and other organizations which deal with problems of public interest.

Northwestern University also carries on some phases of extension work and public service in the city of Chicago. In 1908 a school of commerce was established in the down-town district, with evening classes. In 1914 this had an enrollment of 750. Members of the university faculties have also been active in civic organizations in connection with special investigations and occasionally in holding public office.

MASSACHUSETTS INSTITUTIONS.

In addition to summer courses and other extension work at Harvard University and other institutions, several cooperative systems of extension teaching have been developed by joint action of the leading educational institutions in and near Boston.

Since 1904 a school for social workers has been maintained by the cooperation of Harvard University and Simmons College. More recently a school for health officers has been established by Harvard University and the Massachusetts Institute of Technology.

Extension courses of a more general nature were inaugurated in 1910 under a commission of representatives of Harvard University, Massachusetts Institute of Technology, Tufts College, Boston College, Boston University, Wellesley College, Simmons College, and the Boston Museum of Fine Arts, to which has recently been added

the school committee of Boston. The courses are largely supported by the Lowell Institute, and include the courses of the Teachers School of Science, and the Lowell collegiate courses.

The extension classes are conducted by the members of the faculties of the cooperating institutions, and are of college grade, carrying credit toward the degree of Associate in Arts in Harvard, Radcliffe, Tufts, and Wellesley. Most of the courses are given at Boston University; but some classes meet in the Public Library, the Art Museum, and some of the public schools of Boston. The registration in 1913-14 was 1,100, representing about 940 students. For 1914-15, 20 instructors offered 23 courses in languages, literature, education, art, philosophy, economics, and natural sciences.

Besides the joint courses, extension courses are offered in the later afternoons, evenings, and Saturdays at Harvard, Radcliffe, Boston College, Boston University, and Simmons College. Under the auspices of the Massachusetts Institute of Technology, the Lowell Institute Evening School for Industrial Foremen gives courses in industrial sciences, mechanical and electrical engineering. In 1914, Boston University opened an evening college of business administration.

For students of less preparation the Boston Y. M. C. A. has an extensive system of instruction; and more than 2,000 students take courses, largely in engineering and mechanical sciences at Franklin Institute and the Wentworth Institute.

The formal organization of bureaus of public service and social service has not been largely developed in the private colleges and universities of Massachusetts. But service by members of the faculties on official and quasi-public bodies is more extensive than is generally realized. A report prepared for the university council of Massachusetts shows that during the year 1914, no less than 95 professors and instructors in that State had given direct public service for the State and its municipalities. Later data shows that 32 members of the Harvard faculties have been recently engaged in public service—national, State, and municipal. A large proportion of these and many others have acted on quasi-public societies and committees on problems of public interest.

In January, 1915, the Massachusetts State Board of Education presented a report on a proposal to establish a State university which recommended that in view of existing facilities and other financial demands the State should rather make provision for additional State scholarships for students and the creation of an agency to promote extension teaching and the further cooperation of existing institutions of learning with public administrative agencies.

UNIVERSITY OF WISCONSIN.

University extension at the State University of Wisconsin may be said to begin with the "short course" of four months in practical farming first given by the agricultural college in 1885. In 1892 extension work was more definitely organized, and in 1906 the extension division was reorganized and expanded and has continued to develop rapidly.

The extension division is one of the colleges of the university, with a dean at its head. It comprises four departments: correspondence study, instruction by lectures, debating and public discussion, and general information and welfare. Six district headquarters have been established in different parts of the State.

Correspondence study is the largest and most comprehensive of the extension departments. About 80 instructors are engaged in this work, about one-half giving their full time. In 1914-15 there were 323 courses given to 9,561 students, active during the year. About 30 subjects are offered each year, the largest enrollment being in engineering, business, mathematics, drawing, and English. The correspondence students range from a small proportion below the sixth grade to about one-tenth college graduates. In some subjects the instructors meet the correspondence students in classes.

Lectures are given by about 40 members of the university faculty, and about as many outside lecturers and companies are employed in this work. In 1913-14 a total of 202 courses with 1,169 engagements (682 lectures and 487 concerts and entertainments) were given, with an aggregate attendance of 214,650. This work appears to be mainly in the nature of popular entertainments given in small and rural communities.

The department of debating and public discussion issues bulletins on debating subjects; furnishes loan package libraries of books, pamphlets, and clippings; and replies to inquiries for specific information. In 1913-14, 3,741 package libraries were sent to schools, libraries, and local organizations in 405 communities.

The department of welfare includes six bureaus—on municipal reference, social centers, health information, community music, visual instruction (lantern slides and motion pictures), and press. All of these cooperate actively with local officials and organizations throughout the State, by means of bulletins, institutes, conferences, and exhibits.

Much of the work of the extension division is below the grade of the regular class work in the university. Its purpose is to extend as widely as possible the work of popular education and public service, not only to the cities but to the villages and rural communities throughout the State.

In addition to the work of the extension division, 48 short courses were given in 1914-15 to 624 students; and in the summer school of 1915, 360 courses were given by 210 instructors to 2,780 students.

Besides this the public services of members of the university faculty have been of marked importance. From 1909 to 1913, 14 men were added to the faculty from the public service, and 28 left the faculty to enter public service—8 in the national government (including 1 as Minister to China, and 1 as a member of the Interstate Commerce Commission), and 7 in the service of the State government. In 1914, 32 members of the university faculty were actively engaged in connection with the work of State boards and commissions. Under the present situation in the State government such activities in some lines are not encouraged so much as formerly.

UNIVERSITY OF CALIFORNIA.

The extension division of the University of California was organized in 1913, with a department of instruction and a department of public service, each divided into bureaus. There are now seven bureaus, as follows:

The bureau of class instruction conducts extension classes in a large list of subjects in cities and towns where a sufficient number wish to study the same subject. At present 21 instructors offer 51 courses in different subjects, and there are 149 classes with a total of 1,768 students.

The bureau of correspondence instruction offers 164 courses, given by 46 teachers, with 3,399 students. Some of these courses are elementary, some are given university credit, and some are given university credit by special arrangement.

The bureau of lectures provides lectures, singly or in series of 6 or 12 to be given in any part of the State. For the last year 281 lectures were given, with a total aggregate attendance of 90,000.

The bureau of public discussion assists in organizing debating clubs, suggests subjects for literary societies, publishes bulletins, cooperates with libraries in recommending material for study, and conducts a high-school debating league.

The bureau of municipal reference collects books and documents on municipal affairs and cooperates with the League of California Municipalities in providing municipal exhibits.

The bureau of information answers inquiries addressed or referred to it by individuals, members of the faculty, or the various departments of the university.

The bureau of visual instruction distributes to the public schools lantern slides, motion pictures and exhibits on industrial subjects and all phases of educational work.

Under a separate organization is the summer school, which had an attendance of 2,363 students in 1913.

UNIVERSITY OF CINCINNATI.

Extension work at the University of Cincinnati has been recently developed by means of evening and external classes. Evening classes are held at the university, and the college of commerce also holds its classes in the evening. External classes are given by the members of the faculty in the late afternoons in the various branches of the library and public schools in Cincinnati and vicinity. These classes are of college grade, and credit may be obtained for the university degrees. But special students are encouraged to take evening classes; and a class of "auditors" are admitted to the external classes, on payment of a nominal fee.

Arrangements have also been made with manufacturing establishments by which student employees give part time to practical work in the shops, the wages for which pay most of the necessary living expenses. About 600 students are enrolled in these evening and external classes.

The various colleges of the university—which is a municipal institution—also cooperate actively with the municipal government and public and private institutions. The department of political science maintains a municipal reference bureau in the city hall. The engineering college conducts a city testing bureau. The department of biology conducts the bird reserve, has charge of school gardening, and cooperates with the zoological garden. The department of psychology diagnoses the mental deficiency of school children. The department of social service cooperates with the juvenile court, the department of charities and corrections, the associated charities, and other institutions. The college for teachers cooperates with the superintendent of schools. The medical college is connected with the Cincinnati General Hospital and five other hospitals.

UNIVERSITY OF ILLINOIS.

No general division of university extension has been established at the University of Illinois. Nevertheless, considerable extension work has been done, as well as other forms of extra-mural service. This may be noted as an illustration of conditions in institutions without a fully developed organization for such work.

The agriculture and engineering experiment stations conduct important scientific investigations, the results of which are published in bulletins and extensively distributed. Special mention may be made of a comprehensive soil survey of the State, and the operation of some 50 fields and orchards in various parts of the State for the study of local problems.

A number of State scientific bureaus have their headquarters at the university; and the staffs of these bureaus are in part composed of men also in the service of the university. These include the State laboratory of natural history, the State entomologist, the State water survey, and the State geological survey.

Members of the university faculty also serve on a considerable number of State boards and commissions; and have also been engaged in special investigations for the national, State, and municipal government, dealing, not only with technical scientific studies, but also with economic and political problems, such as taxation, administrative organization and pensions.

Extension work has been most largely carried on by the college of agriculture, which has a department of agricultural extension. This work includes a two weeks' short course in agriculture, agricultural extension courses, demonstrations of soil fertility, cooperation with farmers' institutes and other educational agencies, exhibite

at fairs and expositions, and school and community excursions to the university. Under the Smith-Lever act of 1914 additional extension activities are being undertaken in cooperation with the United States Department of Agriculture.

The department of household science has a staff of seven extension workers, whose activities include correspondence, cooperation with farmers' institutes, an annual school for housekeepers and some extension courses.

More recently short courses have been offered in business administration, ceramics and highway engineering. The department of education has held a model demonstration teachers' institute, and has given series of extension lectures. The High School Visitor connects the university with the accredited high schools of the State; and a conference of high school teachers is held annually at the university.

A community adviser meets with local business, civil and social organizations to furnish information and suggestions as to methods of work and cooperation with the university.

A municipal reference library has been established, which is cooperating with the Illinois Municipal League of city officials and local civic organizations.

OTHER STATE UNIVERSITIES.

At the University of Minnesota the general extension division provides evening classes, correspondence courses, extension lectures, and a lantern slide bureau; conducts "university weeks" in various parts of the State; cooperates with the high-school debating league; and maintains a municipal reference bureau. In 1914-15 there were 159 correspondence courses with a total registration of 3,350. The agricultural extension division cooperates with farmers' institutes; conducts demonstration farms; gives short courses in agriculture and home economics, and cooperates with local institutions and organizations in many other ways. Members of the faculty have also performed important public service for the State and municipal governments.

The University of Michigan renders valuable service to the public through the hospitals and laboratories of its medical schools, a Pastuer institute, dental clinics, the chemical and engineering laboratories. Members of the faculties have been actively engaged in State and municipal problems—notably in the fields of taxation and the valuation of public utilities. A large number of extension lectures and some extension courses for university credit are now offered. A municipal reference bureau has been established. Extension service is also furnished by the university library and museum, the departments of education, architecture, landscape design, forestry, engineering, and in public health. The summer school in 1915 had 200 teachers and 1,677 students.

The University of Kansas has a correspondence study department, a department of general information (which furnishes package libraries, lectures and outlines for study and debate), a department of municipal reference and a department of child welfare.

The University of Texas has an extension department with seven divisions—correspondence, instruction, public welfare, public discussion, home welfare, information, and exhibits, public welfare and child welfare. The bureau of municipal research and reference is one of the most active in the country.

Some general reflections suggest themselves as a result of this survey of the extension and extramural activities of universities and colleges in the United States. In the first place, it may be noted that these developments, like the great expansion which has taken place in the regular teaching and research work of these institutions, involves both a broadening and a deepening of the stream of university influence. Summer schools, extension courses, and much of the other public welfare work spreads the waters of educational culture and training over a broader area—some of it to the established standards of depth, but much of it in shallower and weaker currents. On the other hand, some of the public-service activities which involve intensive

research investigations are cutting deeper channels for the permanent advance of scientific knowledge.

The question arises whether these different phases of this movement are in conflict with each other. Is there a definite volume of educational waters available, so that whatever is used to fertilize the alluvial fields of popular education leaves so much less for the main channels of scientific progress? Or are the springs and reservoirs of limitless capacity, so that there is an ample supply for all varieties and methods of distribution? In either case there is a problem of adjustment and emphasis on the different lines of movement, to secure the most effective results.

A more specific problem in some institutions is how best to apportion the resources immediately at hand as between formulating elaborate plans for the future and the accomplishment of tangible results. There are great advantages in comprehensive planning, yet it looks as if some institutions with very limited means have gone too far in duplicating the detailed organization of institutions with much larger funds, instead of concentrating their energies more effectively on a few activities.

This extension of university and college activities also raises important questions as to their effect on the relation of such institutions, on the one hand to other educational agencies, and on the other hand to the political government of the community. Educational arrangements in this country are marked by the absence of any official organization of the various institutions and educational authorities into a coherent system. As the universities and colleges enter the field of local classes and more elementary instruction, they must come into more direct contact with the local schools and their officials. And out of these closer personal relations there may develop a much needed and more efficient organization of the educational system as a whole.

Is active service on public and governmental problems likely to involve the higher educational institutions in politics? It should be frankly recognized that public service is politics, in the proper sense of the word; and universities and colleges can only avoid this by retiring entirely from all matters in which there is any public interest. The serious problem is whether these institutions can take an active part in public affairs and avoid the danger of injury to their strictly educational functions on partisan, factional, or personal grounds. Some risk of this kind must perhaps be encountered; but the danger will be less the more efficient and non-partisan the work done; and the danger will be increased the more educational institutions undertake public services without an adequate and efficient staff, and the more their work is allied with particular parties, factions, or political leaders.

It is not the purpose of this paper to attempt to offer final solutions to these problems. They are mentioned as factors to be considered in working out the further development of extension and extra-mural activities. They are not insuperable obstacles or arguments against the movement. What has been accomplished shows that the movement is already well under way, and likely to make more rapid progress in the future than in the past.

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The CHAIRMAN. There is a close relationship between the universities and various public bureaus, between the universities and the public health department in particular. That is true in the State of Minnesota. The subject is open for discussion.

Mr. MARSHALL. The point of the chairman is well taken. I will say that it is the duty by law of our State to carry out the laws. There are laws about the cutting of trees on private places, the necessity of which often causes lawsuits. There ought to be laws requiring certain Government officials to be trained at the universities. For instance, that the road engineers be required by law to go to the university and attend the class of engineering.

The CHAIRMAN. Are there other comments?

Mr. GRAHAM. How would that apply with respect to the pure-food laws, to the elimination of diseases of cattle, and things of that kind?

Mr. CHAIRMAN. I think in no way whatever.

Mr. BARALT. There are duties that call for expert advice and expert service for which we do not have men trained outside of the universities at the present time.

Mr. CLAXTON. There ought to be an agreement between the universities and the municipal government. It is so in the States of Minnesota, North Dakota, North Carolina and Iowa, where there are two, sometimes three institutions, performing the functions ordinarily performed by one. Different institutions ought to combine their efforts and coordinate the powers of each other. They ought to get together and make an inventory of their efforts and see if they can combine them for mutual benefit.

An inventory should be made as to what is needed by the State and then the different institutions should agree among themselves as to which man is best benefited by each particular institution and should have that accomplished through the State board of education.

Mr. MANNING. All Government officials ought to be trained at the universities.

Mr. CLAXTON. I would like to ask how they are doing the work in North Carolina.

Mr. FARREL. I will say while we have one institution in our State, we find that the same problem confronts the other institutions. We try to recognize the standard that the university sets up. In the question of extension teaching in the universities, I think it ought not to be put entirely in the hands of one college, but should be put jointly in the hands of all of them.

The session adjourned at 1 o'clock.



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